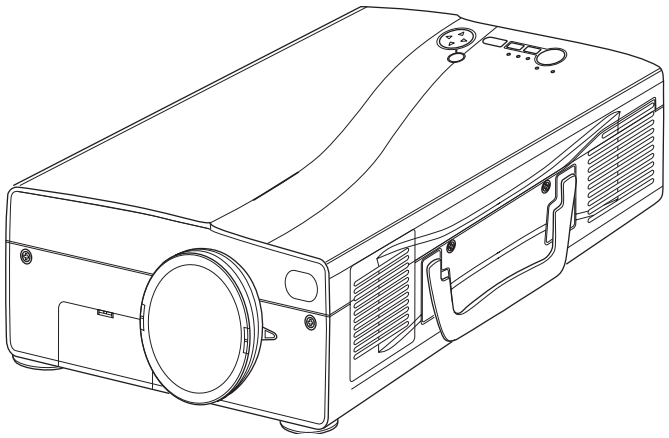
HITACHI

SM0517

CPSX5500W

SERVICE MANUAL



Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi Multimedia LCD Projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

ServiceWarning

1. When replacing the lamp, avoid burns to your fingers, the lamp becomes very hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (main) when turning on the projector.
4. Do not touch the exhaust fan, during operation.
5. The LCD module assembly is likely to be damaged. If replacing the LCD module assembly, do not hold the FPC of the LCD module assembly.

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Multimedia LCD Projector

November 2001 Digital Media Systems Division

1. Features

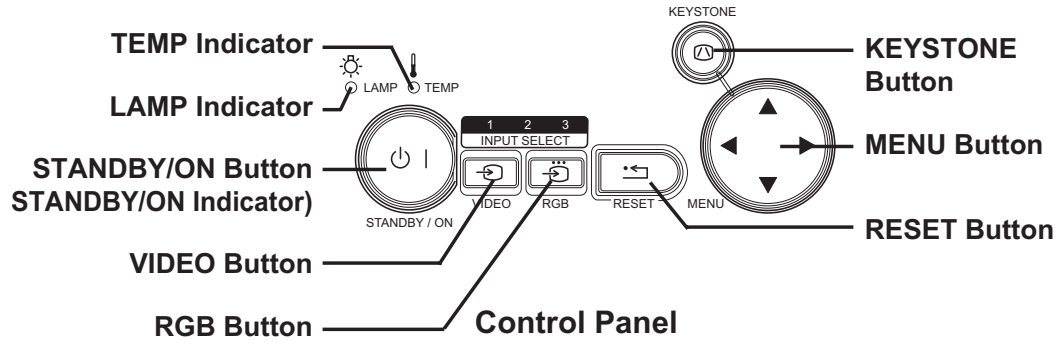
- 0.9 inches reflecting type liquid crystal panel use.
- High brightness, High resolution.
- RS-232C communication.
- Complies with VESA DDC1/2B specifications.
- Right and left reversal, vertical reversal function.

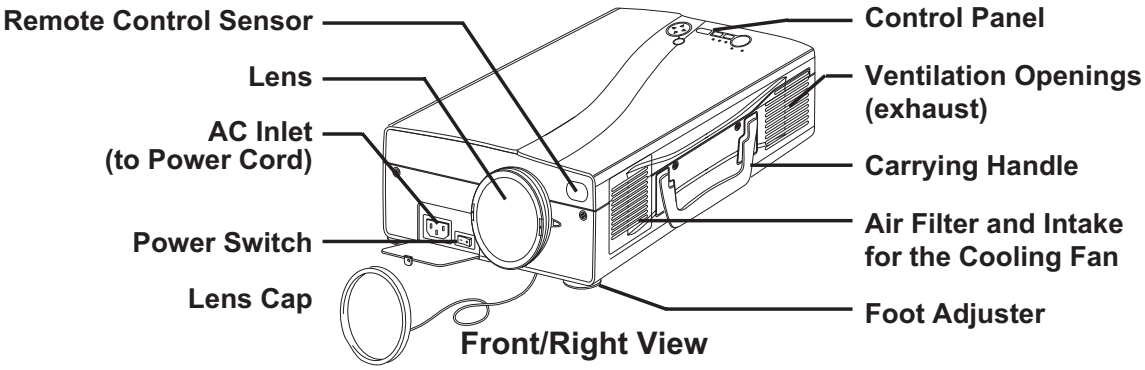
2. Specifications

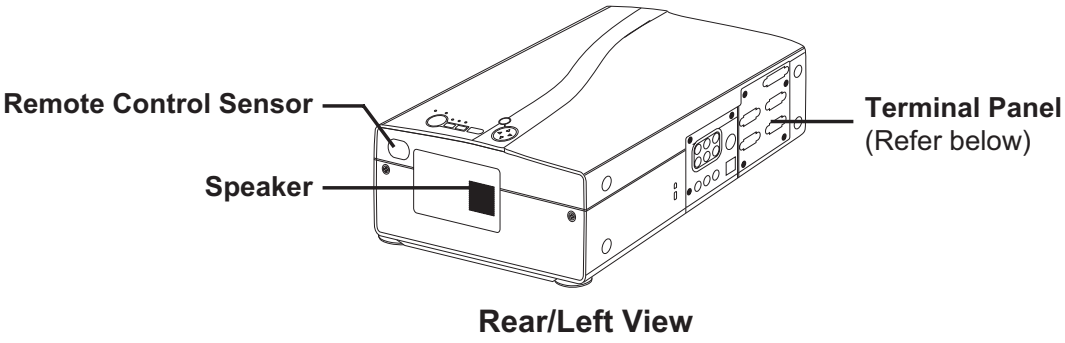
Liquid crystal panel	Drive system		Driver built-in type active matrix
	Panel size		0.9 inches
	Number of pixels		1365 (H) × 1024 (V)
Lamp			220W UHB
Video input	Composite	System	NTSC(3.58/4.43), PAL(B,G,D,H,I), PAL(M,N), SECAM
		Level	Composite 1.0±0.1Vp-p (75Ω termination) S-video Y : 1.0±0.1Vp-p (75Ω termination) C : 0.29±0.1Vp-p (NTSC burst signal, 75Ω termination) 0.30±0.1Vp-p (PAL/SECAM burst signal, 75Ω termination)
	Component	System	480i, 480p, 625i, 720p, 1080i, 1035i
		Level	Y 1.0±0.1Vp-p (75Ω termination) Cb/Cr 0.7±0.1Vp-p (75Ω termination) Pb/Pr 0.9±0.1Vp-p (75Ω termination)
RGB	Analog input	Video signal	Type R.G.B separate Amplitude signal 0.7±0.1Vp-p (75Ω termination)
		Sync signal	Type H.V separate Amplitude signal TTL level ("L" : less than 0.8V, "H" : more than 2.0V)
	Digital input	signal	Type T.M.D.S Amplitude differential signal DC : 150~1200mV AC : 1.56Vp-p Amplitude signal TTL level ("L" : less than 0.8V, "H" : more than 2.0V)
	Analog output	Video signal	Type R.G.B separate Amplitude signal 0.7±0.1Vp-p (75Ω termination)
		Sync signal	Type Based on input type Amplitude signal TTL level (Sync on G : 0.3Vp-p)
Audio	Input level		200mVrms, 20KΩ±5%
	Output level	terminal	0~200Vrms, 1KΩ±5%
		Speaker	1.0W (mono)
Power supply			AC100~120V/4.0A, AC220~240V/1.8A
Power consumption			360W
Dimensions			250 (W) × 103 (H) × 335 (D) mm
Weight			5.6kg (12.4lbs)
Temperature range			Operation : 0~35°C Storage : -20~60°C
Accessories			Remote control transmitter × 1 RGB cable × 1 Component cable × 1 POWER cord × 3 Battery (inside Remote control transmitter)× 1 Mouse cable × 1 Video/Audio cable × 1 User's manual (with Safety Instructions)× 1

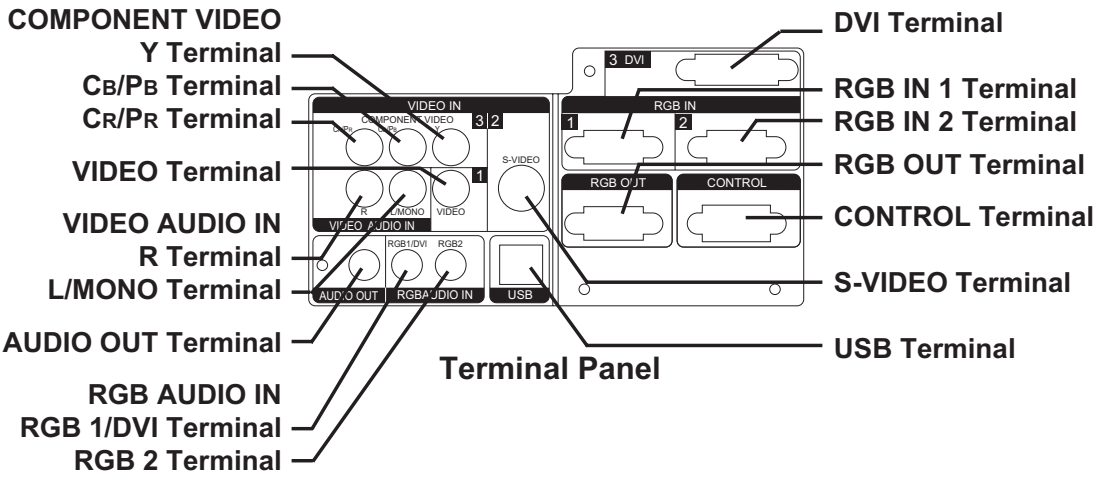
3. Names of each part

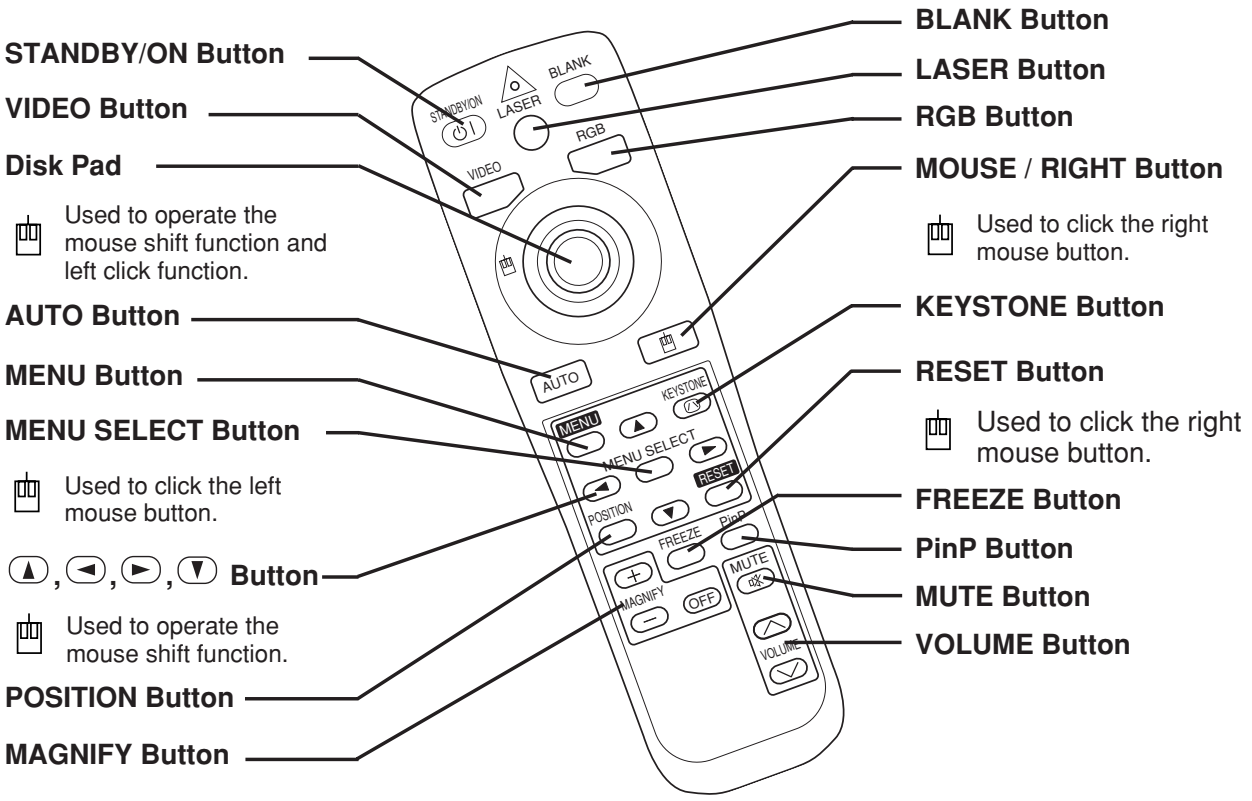
● Parts names







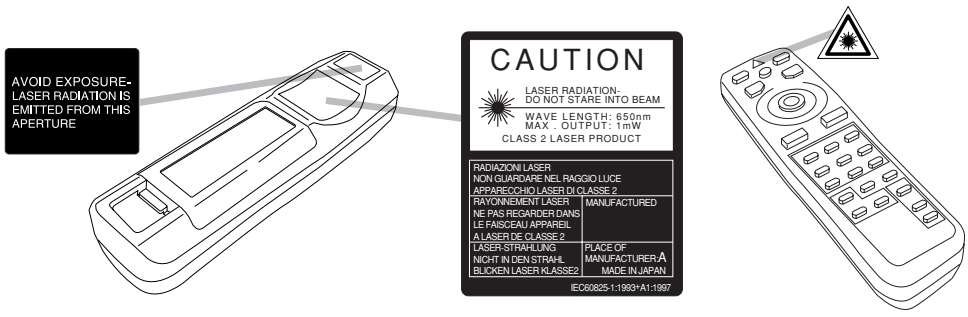




REMOTE CONTROL TRANSMITTER

These functions works when the mouse control function is activated. Remember, the POSITION, BLANK ON and MENU ON functions disable the mouse control function.

⚠ WARNING • The laser pointer of the remote control transmitter is used in place of a finger or rod. Never look directly into the laser beam outlet or point the laser beam at other people. The laser beam can cause vision problems.



NOTE To prevent any malfunction;

- Do not give the remote control transmitter any physical impact. Take care not to drop.
- Do not place the heavy objects on the remote control transmitter.
- Do not wet the remote control transmitter or place it on any wet object.
- Do not place the remote control transmitter close to the cooling fan of the projector.
- Do not disassemble the remote control transmitter in case of malfunction. Please bring it to the service station.

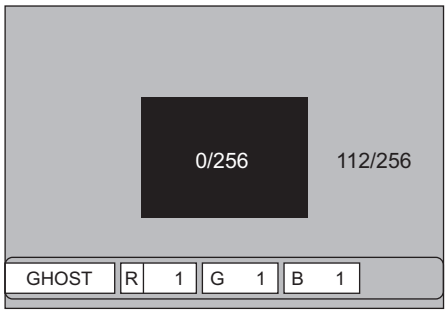
4. Adjustment

4-1 Before adjusting

1. Before starting adjustment, warm up the projector for about 30 minutes.(Blank white)
2. Set Zoom Wide to Max. And project an image a distance of more than 40 inches.
3. Normalizing the video adjustment.
   (Press the [MENU] button of the Remote control transmitter to display the Setup menu, and then press the [RESET] button. And select the [DEFAULT].)
   *note : The setup menu is not displayed on with no signal.
4. Perform all adjustments from the Adjustment menu. Perform the following operations to display the Adjustment menu.
   a. Press the [MENU] button of the Remote control transmitter (the Setup menu will appear).
   b. Next, press the [RESET] button one time. And press the [RESET] button again for 5 seconds or more (the Adjustment menu will appear).

4-2 Ghost adjustment

Signals for internal adjustment

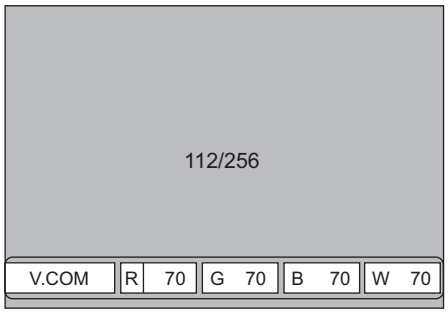


Adjustment procedure

1. Use DAC-P - GHOST - R: in the Adjustment menu to adjust so that R color ghost is at a minimum.
   (Set the adjustment value to default, and then raise the value. When a ghost appears to the left of a vertical line, reduce the value by 1 steps.)
2. In the same way, use DAC-P - GHOST-G: in the Adjustment menu to adjust so that G color ghost is at a minimum.
3. In the same way, use DAC-P - GHOST-B: in the Adjustment menu to adjust so that B color ghost is at a minimum.

4-3 Flicker adjustment (V.COM adjustment)

Signals for internal adjustment

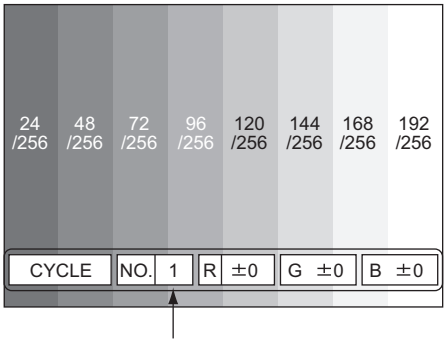


Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-2 Ghost adjustment.
2. Use DAC-P - V.COM - R: in the Adjustment menu to adjust so that the flicker at the center of the screen is less than the flicker at the periphery.
   (When the flicker is about the same across the whole screen, adjust so that the flicker at the center of the screen is somewhat less than elsewhere.)
3. In the same way, use DAC-P - V.COM-G: in the Adjustment menu to adjust the G color flicker.
4. In the same way, use DAC-P - V.COM-B: in the Adjustment menu to adjust the B color flicker.

4-4 CYCLE OFFSET adjustment (vertical stripe adjustment)

Signals for internal adjustment



Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-3 Flicker adjustment.
2. Use DAC-P - CYCLE - R: in the Adjustment menu to adjust so that the vertical lines spaced every 12 dots are as inconspicuous as possible.
3. In the same way, use DAC-P - CYCLE - G: in the Adjustment menu to adjust vertical stripes of G color.
4. In the same way, use DAC-P - CYCLE - B: in the Adjustment menu to adjust vertical stripes of B color.

4-5 White balance adjustment

GAMMA MENU (left side)

VID-AD	C.UNIF.	DAC-P	GAMMA	GAMMA
		R	G	B
	93%	± 0	± 0	± 0
	86%	± 0	± 0	± 0
	75%	± 0	± 0	± 0
	43%	± 0	± 0	± 0
	29%	± 0	± 0	± 0
	14%	± 0	± 0	± 0
	0%	± 0	± 0	± 0

GAMMA MENU (right side)

VID-AD	C.UNIF.	DAC-P	GAMMA	GAMMA
		R	G	B
	SUB CONTRAST	128	128	128
	SUB BRIGHT	128	128	128

Preparations

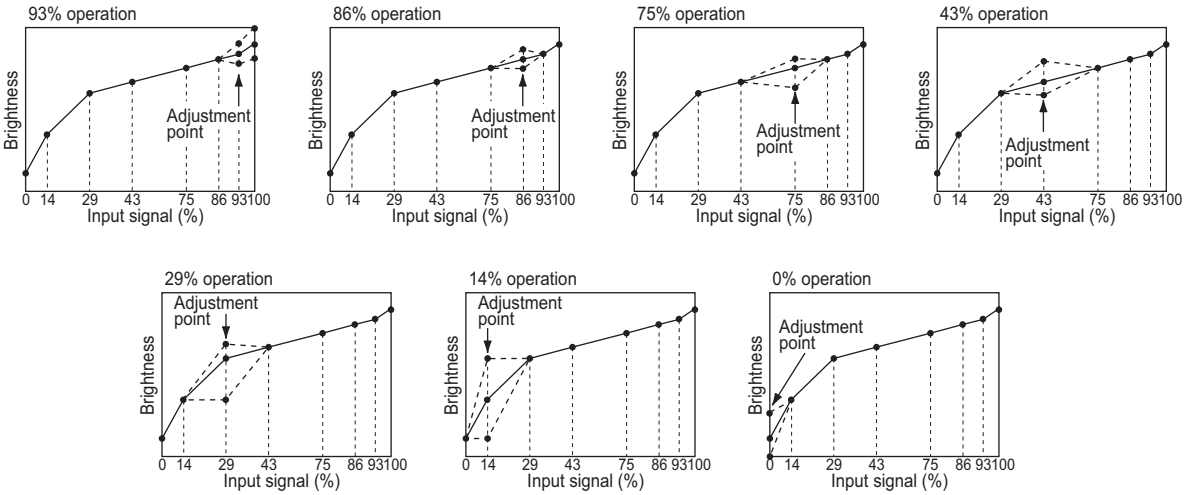
1. Perform these adjustments after the CYCLE OFFSET adjustment described in Section 4-4.
2. Reset gamma correction before adjustment.
   - Place the cursor on [GAMMA] (left side) in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - Now press the [RESET] key again and press the [MAGNIFY-OFF] button of the Remote control transmitter for 5 seconds or more (the confirming to “MICRO” reset menu will appear).
   - Place the cursor on [GAMMA] (right side) in the Adjustment menu, press the [RESET] key and select [DEFAUT].
3. Whisper mode set to [Normal] in the Setup menu.

Adjustment procedure

1. First, adjust the G color.
2. GAMMA mode set to [DYNAMIC] in the Image menu.
3. BRIGHT and CONTRAST set to in the Setup menu.
4. Place the cursor on Slide Show in the Adjustment menu [A/D], press the [▶] key three times to display G monochrome and adjust the luminance at the center of the screen. Make a note of the setting (here assumed to be A [lx]). Press the MENU key to return.
5. BRIGHT and CONTRAST is returned to default in the Setup menu.
6 GAMMA mode is returned to default in the Image menu.
7 Place the cursor on 0%, measure the illumination at the center of the screen. Make a note of the setting (here assumed to be B [lx].
8. Adjust Gamma, 93%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.680 +B ± 2% [lx]

9. Adjust Gamma, 86%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.570 +B ± 2% [lx]
10. Adjust Gamma, 75%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.425 +B ± 2% [lx]
11. Adjust Gamma, 43%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.124 +B ± 2% [lx]
12. Adjust Gamma, 29%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.051 +B ± 2% [lx]
13. Adjust Gamma, 14%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = (A-B) x 0.011 +B ± 2% [lx]
14. Adjust Gamma, 0%, and G: set to 0.
15. Now, adjust the R and B colors.
16. Adjust Gamma, 93%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.290 ± 0.001
   y = 0.340 ± 0.002
17. Adjust Gamma, 86%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.290 ± 0.001
   y = 0.340 ± 0.002
18. Adjust Gamma, 75%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.290 ± 0.001
   y = 0.340 ± 0.002
19. Adjust Gamma, 43%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.290 ± 0.001
   y = 0.340 ± 0.002
20. Adjust Gamma, 29%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.290 ± 0.001
   y = 0.340 ± 0.002
21. Adjust Gamma, 14%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
   x = 0.270 ± 0.001
   y = 0.310 ± 0.002
22. Adjust Gamma, 0%, R: and B: set to 0.

Adjustment operations (reference)

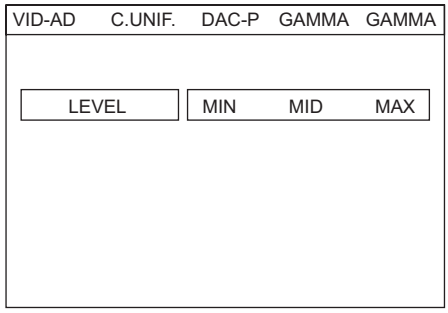


4-6 Color uniformity adjustment

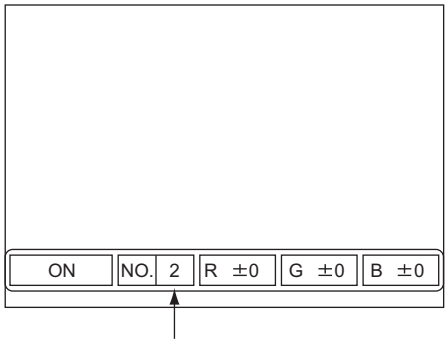
Preparations

1. Perform these adjustments after the white balance adjustment described in Section 4-5.
2. Make a color uniformity adjustment for the following three tones.
   - MIN tone (approx. 10% input signal)
   - MID tone (approx. 50% input signal)
   - MAX tone (approx. 75% input signal)
3. Place the cursor on the tone to be adjusted in the Adjust menu and press the [▼] key. This displays the Adjust Tone menu at the bottom of the screen. Select the major adjustment lattice point No. and color, and then adjust them.
4. The major adjustment lattice point numbers (a total of 17 points) corresponds to the major adjustment lattice point positions in the diagram on the right. The color uniformity of the entire screen can be adjusted by adjusting the white balance for each of the points starting in order from the low numbers.
5. Adjustment point No.1 should not be adjusted, because it controls the brightness of the entire screen.
6. To temporarily turn correction off, place the cursor on “ON” in the Adjust Tone menu and press the [▼] key. To turn it on again, place the cursor on OFF in the Adjust Tone menu and press the [▲] key.
7. Although this adjustment can also be made using internal signals, we will here use the [MENU SELECT] key on the Remote control transmitter to select the following two signals.
   - Solid monochrome adjustment color (use G color adjustment when a color differential meter is used).
   - Solid white (use for adjustment other than above).
8. Reset color-shading correction before adjustment.
   - When 3 tones and all colors are to be reset, place the cursor on [C.UNIF.] in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - When only 1 tone is to be reset, place the cursor on the tone to be reset, press the [RESET] key and select [DEFAULT].
   - Single tone and monochrome resets cannot be performed.

Adjust menu

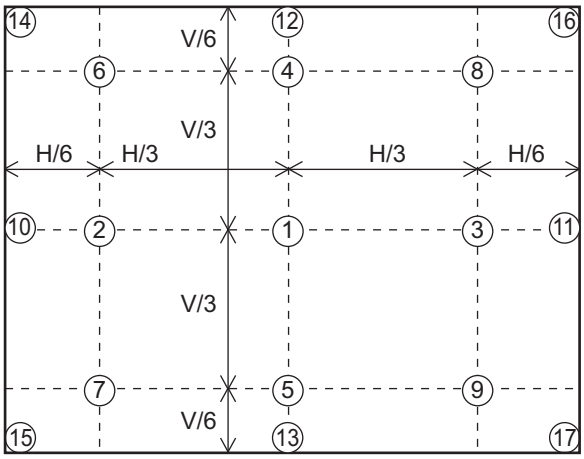


Adjust Tone menu



Major adjustment lattice point No.

Major adjustment lattice point position



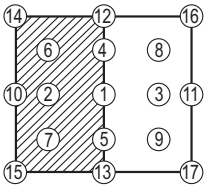
Adjustment procedure 1
(when a color differential meter is used)

1. First adjust [MID] tone [G:].
2. Select adjustment point [No.2][G:].
   When the background is not [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid [G] monochrome.
3. Measure the illumination at adjustment points No. 2, No.3, No.10 and No.11.
   The values should be:
   No.2 = Y2 [lx] No.10 = Y10 [lx]
   No.3 = Y3 [lx] No.11 = Y11 [lx]
4. No.2 and No.3 adjustment point have the average of Y2 and Y3.
   Y2 = (Y2 + Y3) / 2 ± 2%
   Y3 = (Y2 + Y3) / 2 ± 2%
5. No.10 and No.11 adjustment point have the average of Y10 and Y11.
   Y10 = (Y10 + Y11) / 2 ± 2%
   Y11 = (Y10 + Y11) / 2 ± 2%
6. Then adjust [MID] tone [R] and [B].
   When the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
7. Measure the color coordinates of adjustment point [No.1] and make a note of them.
   Assume that they are x = x1, y = y1.
   Note: When the CL-100 color and color difference meter is used, the [△](delta) mode is convenient. When adjustment point [No.1] color coordinate has been selected, set the slide switch on the side to [△](delta) while holding down the [F] button on the front panel. The measurement shown after this displays the deviation from measurement point 1.
8. Measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
   x = x1 ± 0.005 , y = y1 ± 0.010
9. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
   This completes adjustments required for [MIN].
   Note: Since excessive correction may lead to a correction data overview during internal calculations, use the following values for reference.
   [No.2] to [No.5] ± 40 or less
   [No.6] to [No.9] ± 50 or less
   [No.10] to [No.13] ± 70 or less
   [No.14] to [No.17] ± 120 or less
10. In the same way, use [C.UNIF.] - [MAX] - [G] : in the Adjustment menu to adjust uniformity of G color. Specification as is [MID] tone.
11. In the same way, use [C.UNIF.] - [MAX] - [R] and [B] : in the Adjustment menu to adjust uniformity of white. Specification as is [MID] tone.
12. Then adjust [MIN] tone [G] so that the adjustment data are same as [MID] tone [G].
13. Then adjust [MIN] tone [R] and [B]. Select [No.2] [B:] and press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
14. Measure the color coordinates of adjustment point [No.1] and make a note of them.
    Assume that they are x = x1, y = y1.
15. Now measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
    x = x1 ± 0.005 , y = y1 ± 0.010 (Target)
    x = x1 ± 0.020 , y = y1 ± 0.040
16. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
    This completes [MIN] tone adjustments.

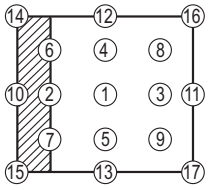
Adjustment procedure 2
(visual inspection)

1. First adjust [MIN] tone [G:].
2. Select [No.2] [G:].
   If the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
3. View measurement point [No.2] and [No.3].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1].
4. View measurement point [No.10] and [No.11].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1], and raise the intensity of the point whose color intensity is lower than measurement point [No.1].
5. Now adjust the [MIN] tone for colors [R] and [B].
6. View measurement points [No.2], [No.3], [No.10] and [No.11]. Adjust the [R] and [B] of each measurement point so that they have the same color as measurement point [No.1].
   Adjustment technique:
   First, adjust [B:] of the point whose color is to be adjusted so that it approximates that of [No.1]. If [R:] is low at this time, the image will have cyan cast, in which case [R:] is increased. On the other hand, if [R:] is excessive, the image will have a magenta cast, in which case [R:] is decreased.
   Overall, a cyan cast makes it easy to see color shading.
7. Next, view measurement points [No.4], [No.5], [No.12], [No.13] and make similar adjustments.
8. Then adjust measurement points [No.6], [No.7], [No.8], [No.9], [No.14], [No.15], [No.16] and [No.17].
   This completes the [MIN] tone adjustments.
9. Make similar another three tones as described in steps 1 to 8 above.

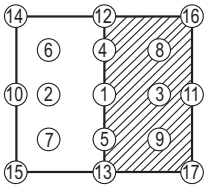
No. 2 deviation range



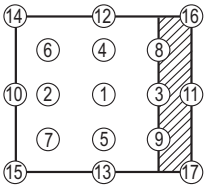
No. 10 deviation range



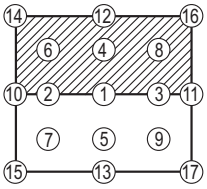
No. 3 deviation range



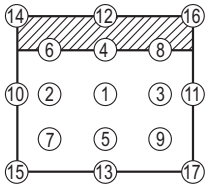
No. 11 deviation range



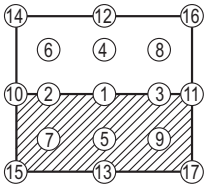
No. 4 deviation range



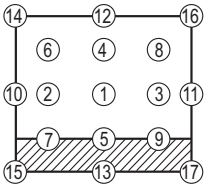
No. 12 deviation range



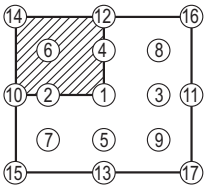
No. 5 deviation range



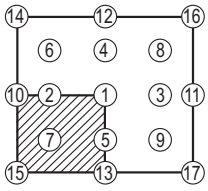
No. 13 deviation range



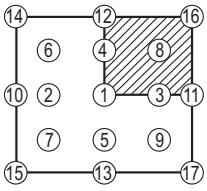
No. 6 deviation range



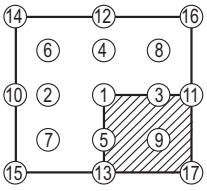
No. 7 deviation range



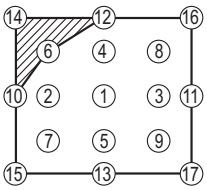
No. 8 deviation range



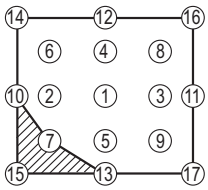
No. 9 deviation range



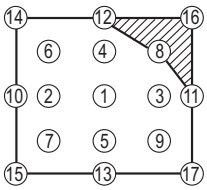
No. 14 deviation range



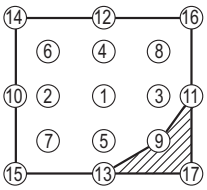
No. 15 deviation range



No. 16 deviation range

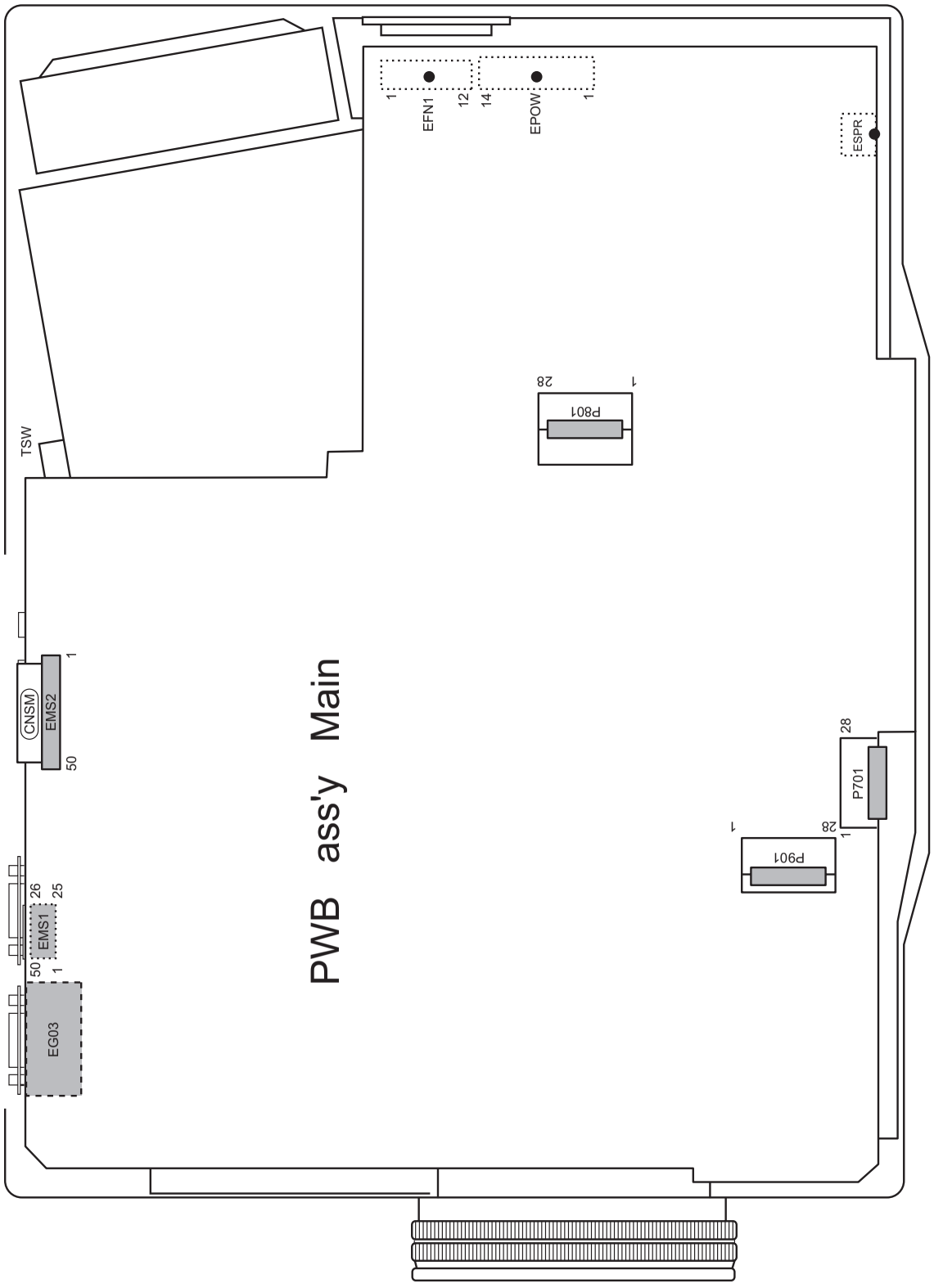


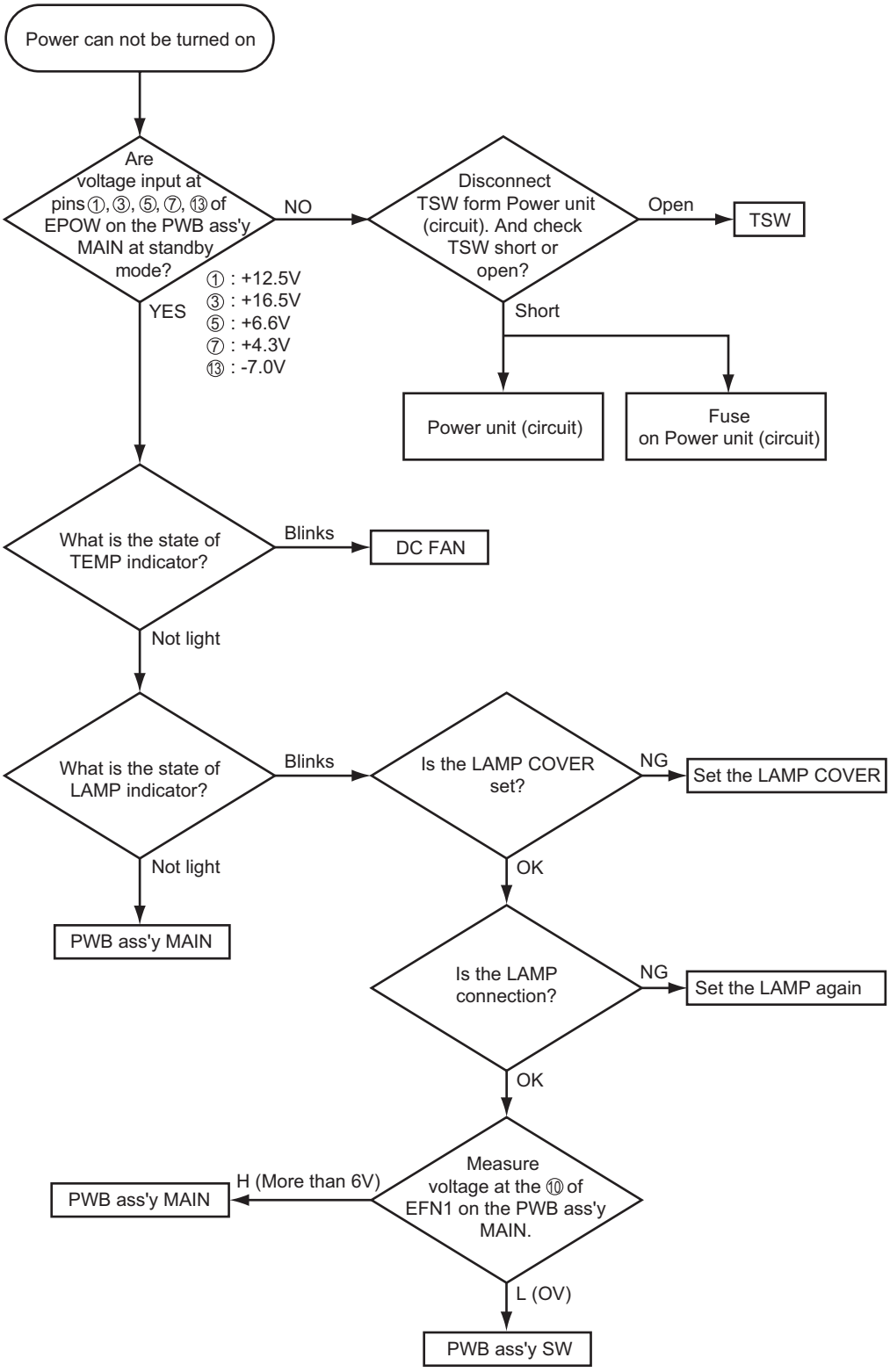
No. 17 deviation range

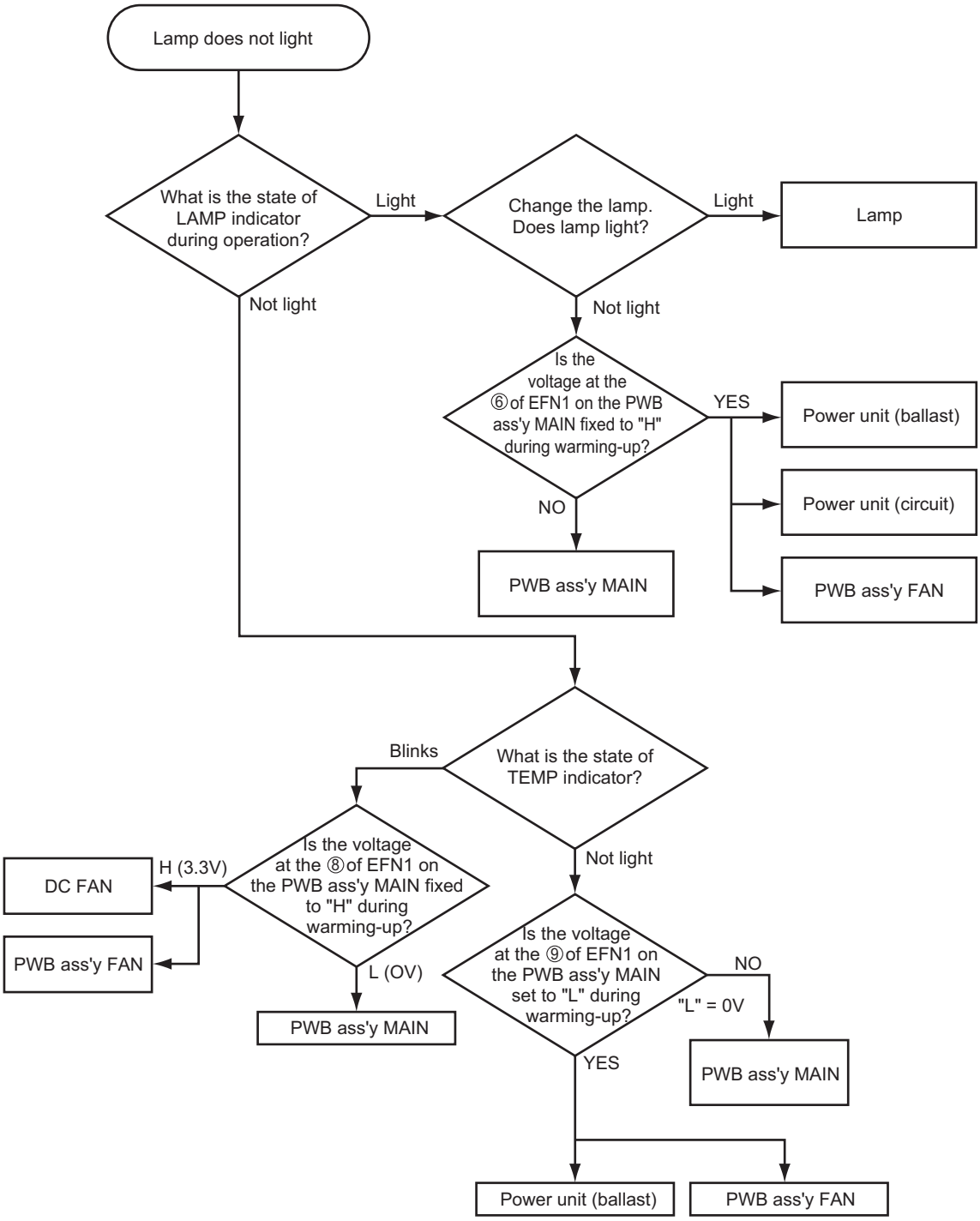


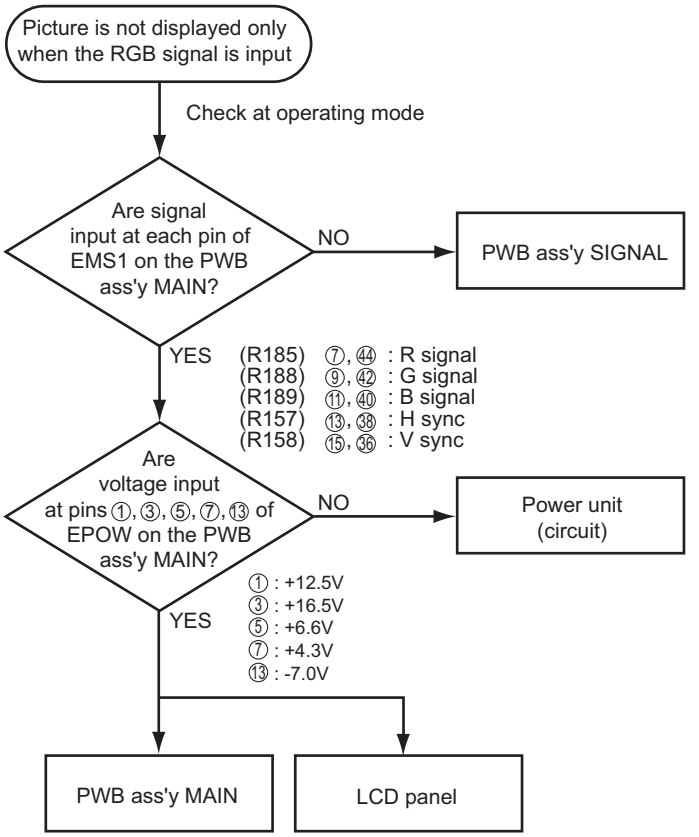
5. Troubleshooting

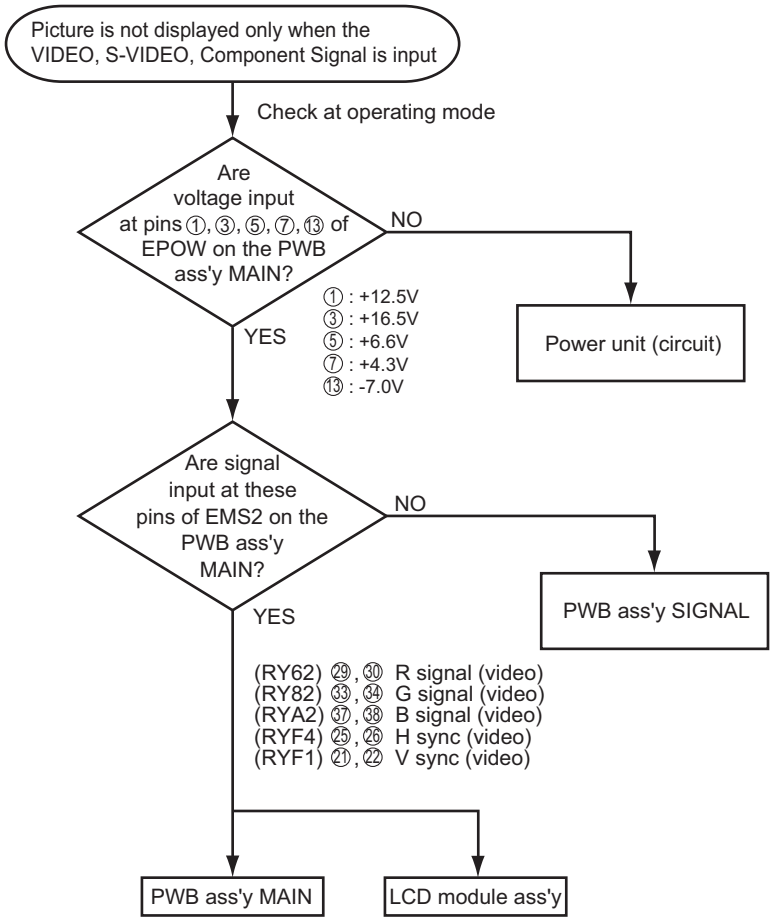
Check points at trouble shooting

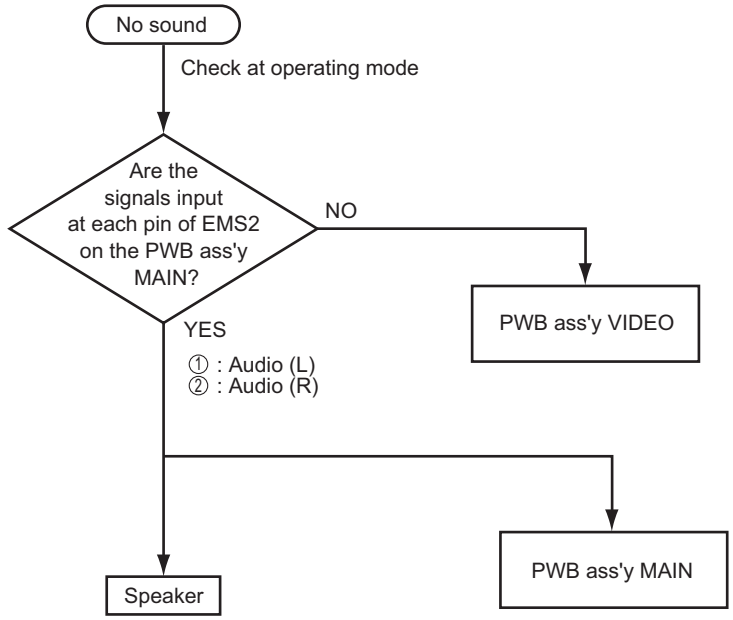


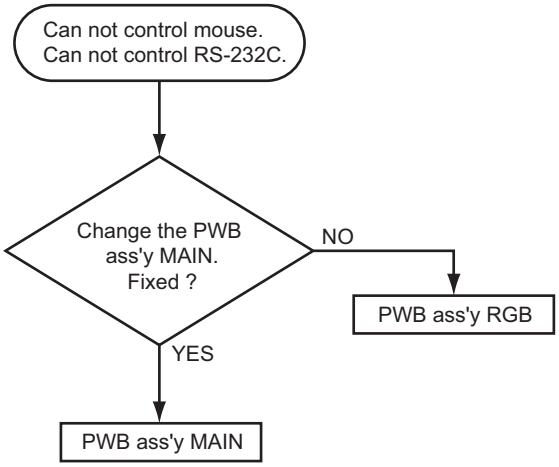

Power can not be turned on
Are voltage input at pins ①, ③, ⑤, ⑦, ⑬ of EPOW on the PWB ass'y MAIN at standby mode?
NO
Disconnect TSW form Power unit (circuit). And check TSW short or open?
Open
TSW
Short
Power unit (circuit)
Fuse on Power unit (circuit)
① : +12.5V
③ : +16.5V
⑤ : +6.6V
⑦ : +4.3V
⑬ : -7.0V
YES
What is the state of TEMP indicator?
Blinks
DC FAN
Not light
What is the state of LAMP indicator?
Blinks
Is the LAMP COVER set?
NG
Set the LAMP COVER
Not light
OK
PWB ass'y MAIN
Is the LAMP connection?
NG
Set the LAMP again
OK
Measure voltage at the ⑩ of EFN1 on the PWB ass'y MAIN.
H (More than 6V)
PWB ass'y MAIN
L (OV)
PWB ass'y SW

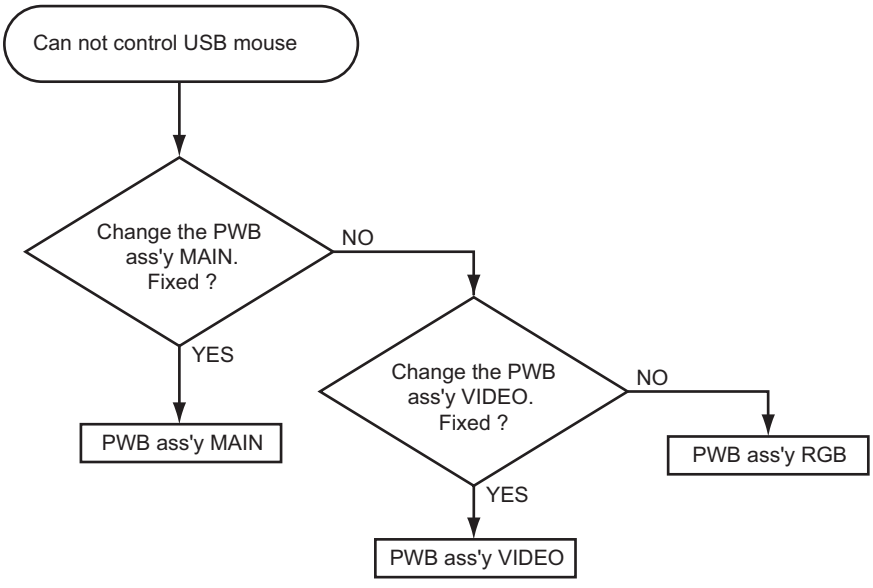

Lamp does not light
What is the state of LAMP indicator during operation?
Light
Change the lamp. Does lamp light?
Light
Lamp
Not light
Not light
Is the voltage at the ⑥of EFN1 on the PWB ass'y MAIN fixed to "H" during warming-up?
YES
Power unit (ballast)
Power unit (circuit)
PWB ass'y FAN
NO
PWB ass'y MAIN
What is the state of TEMP indicator?
Blinks
Not light
Is the voltage at the ⑧of EFN1 on the PWB ass'y MAIN fixed to "H" during warming-up?
H (3.3V)
DC FAN
PWB ass'y FAN
L (OV)
PWB ass'y MAIN
Is the voltage at the ⑨of EFN1 on the PWB ass'y MAIN set to "L" during warming-up?
NO
"L" = 0V
PWB ass'y MAIN
YES
Power unit (ballast)
PWB ass'y FAN


Picture is not displayed only when the RGB signal is input
Check at operating mode
Are signal input at each pin of EMS1 on the PWB ass'y MAIN?
NO
PWB ass'y SIGNAL
YES
(R185) ⑦, ㊹ : R signal
(R188) ⑨, ㊷ : G signal
(R189) ⑪, ㊵ : B signal
(R157) ⑬, ㊳ : H sync
(R158) ⑮, ㊱ : V sync
Are voltage input at pins ①, ③, ⑤, ⑦, ⑬ of EPOW on the PWB ass'y MAIN?
NO
Power unit (circuit)
YES
① : +12.5V
③ : +16.5V
⑤ : +6.6V
⑦ : +4.3V
⑬ : -7.0V
PWB ass'y MAIN
LCD panel


Picture is not displayed only when the VIDEO, S-VIDEO, Component Signal is input
Check at operating mode
Are voltage input at pins ①, ③, ⑤, ⑦, ⑬ of EPOW on the PWB ass'y MAIN?
NO
Power unit (circuit)
YES
① : +12.5V
③ : +16.5V
⑤ : +6.6V
⑦ : +4.3V
⑬ : -7.0V
Are signal input at these pins of EMS2 on the PWB ass'y MAIN?
NO
PWB ass'y SIGNAL
YES
(RY62) ㉙, ㉚ R signal (video)
(RY82) ㉝, ㉞ G signal (video)
(RYA2) ㊲, ㊳ B signal (video)
(RYF4) ㉕, ㉖ H sync (video)
(RYF1) ㉑, ㉒ V sync (video)
PWB ass'y MAIN
LCD module ass'y


No sound
Check at operating mode
Are the signals input at each pin of EMS2 on the PWB ass'y MAIN?
NO
PWB ass'y VIDEO
YES
① : Audio (L)
② : Audio (R)
Speaker
PWB ass'y MAIN


Can not control mouse.
Can not control RS-232C.
Change the PWB ass'y MAIN. Fixed ?
NO
PWB ass'y RGB
YES
PWB ass'y MAIN


Can not control USB mouse
Change the PWB ass'y MAIN. Fixed ?
NO
YES
PWB ass'y MAIN
Change the PWB ass'y VIDEO. Fixed ?
NO
PWB ass'y RGB
YES
PWB ass'y VIDEO

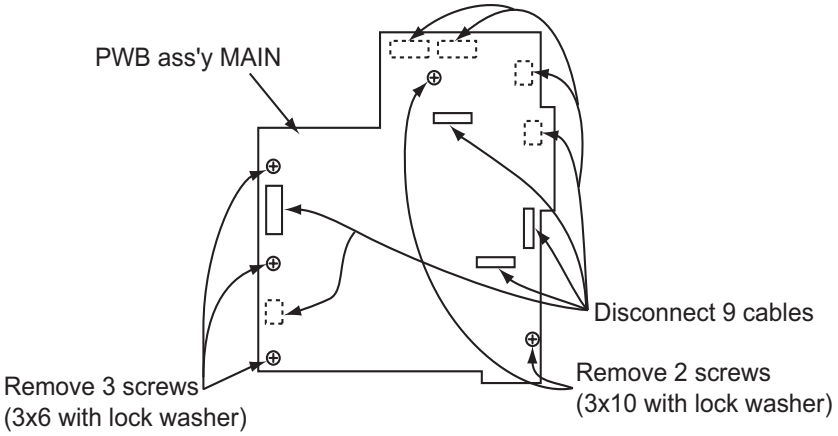
6. Service points

● Cautions when removing the PWB Ass'y MAIN

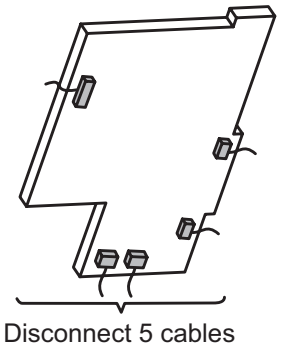
When removing the PWB Ass'y MAIN, there is danger of damaging the connector connecting cables.

1) Disconnect 9 cables and remove 5 screws.

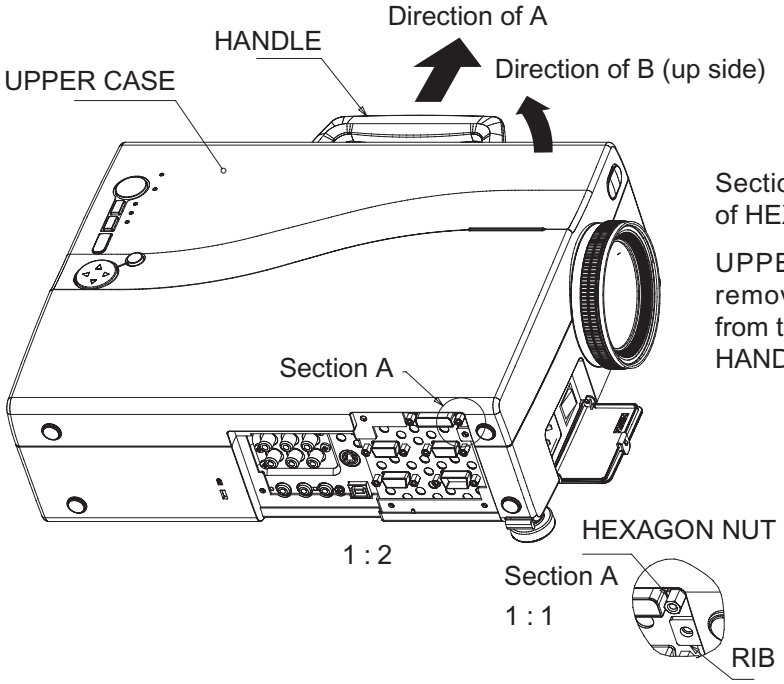
- Take care not to touch the terminals when connecting or disconnecting the panel FPC.
- Be sure to insert the panel FPC firmly. (The panel may be broken due to ratch-up).



2) Disconnect 5 cables lifting the PWB Ass'y MAIN.

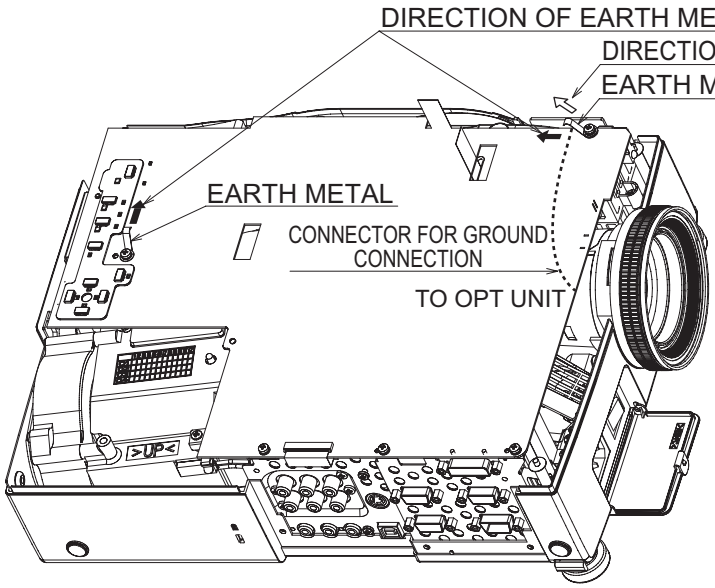


● Cautions when removing the UPPER CASE



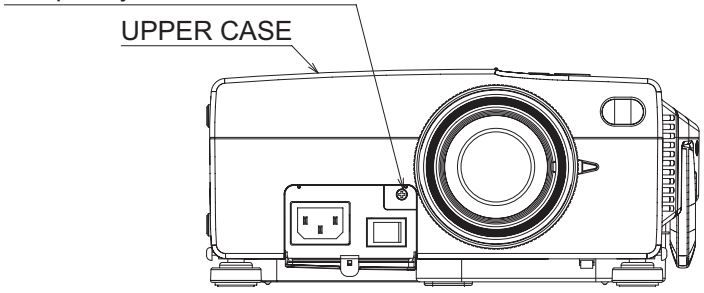
Section A : Contact prevention of HEXAGON NUT and RIB.

UPPER CASE is raised and removed in the direction of B from the HANDLE side, pulling a HANDLE in the direction of A.

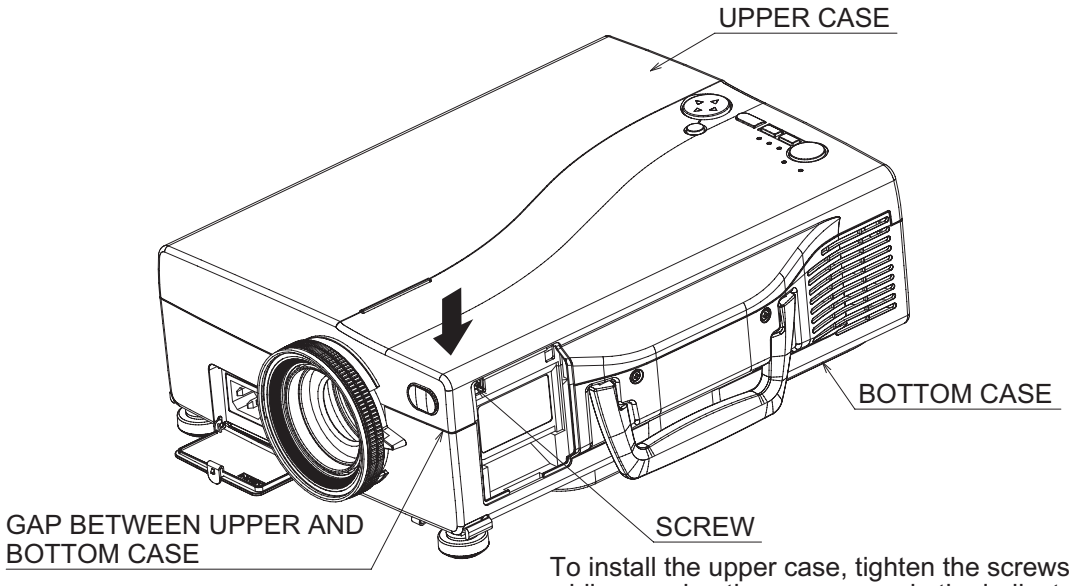


Attach the metal of the ground wire and connector wire terminal so it faces in the indicated direction as shown.

To remove the upper case, completely loosen the screws.

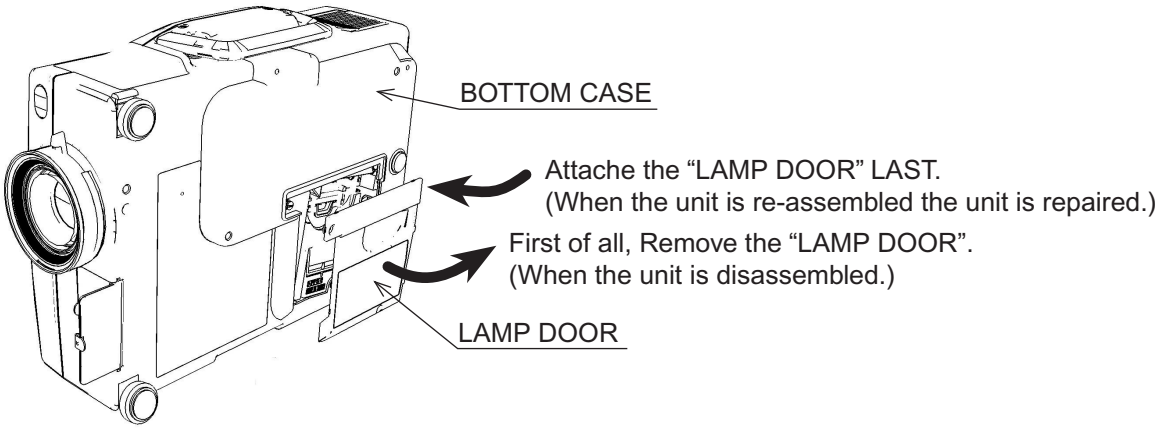


● Cautions when install the UPPER CASE



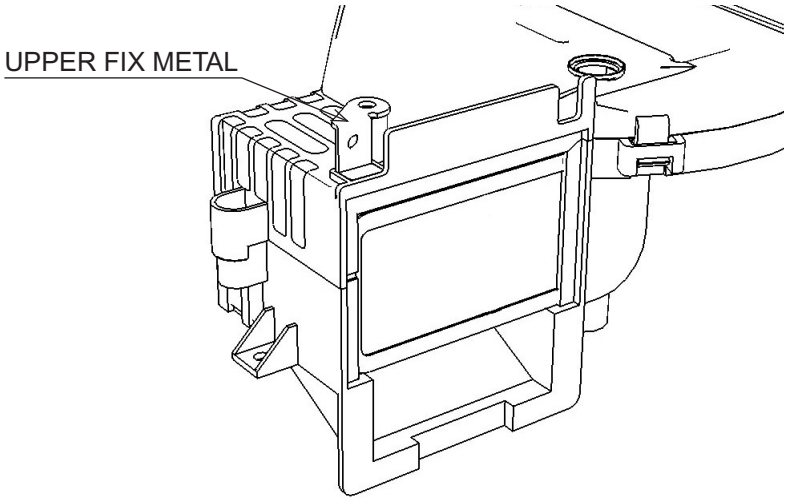
To install the upper case, tighten the screws as, while pressing the upper case in the indicated direction
(allowing no clearance where the case is set in the position shown).

● Cautions when assembling and disassembling the CASE


BOTTOM CASE
Attache the “LAMP DOOR” LAST.
(When the unit is re-assembled the unit is repaired.)
First of all, Remove the “LAMP DOOR”.
(When the unit is disassembled.)
LAMP DOOR

● Cautions when assembling the PWB ass’y MAIN

Before assembling the PWB ass’y MAIN, Please check that the UPPER FIX METAL is located in this position.
Otherwise, the UPPER CASE may not be fit.



● Cautions when connecting the liquid crystal panel

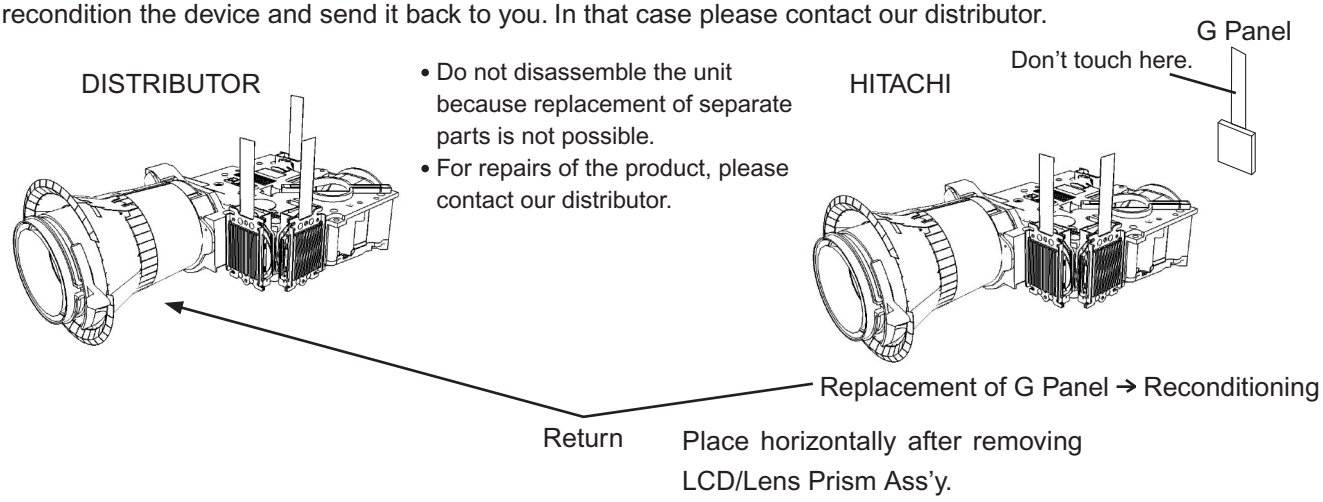
When the liquid crystal panel FPC is connected, if there is any connecting error, the picture may be poor in uniformity and have some bright dots.

In these cases, take measures according to the following:

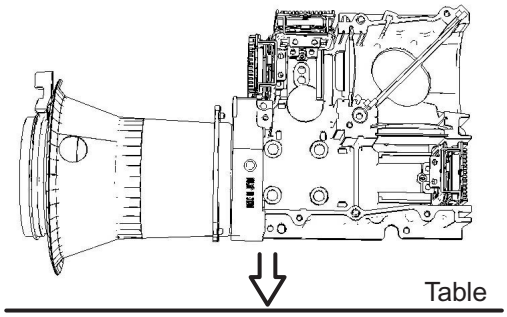
1. At the “4-3 Flicker adjustment”, measure the voltage of the pin No.1 or 28 of P701 for [R]/P801 for [G]/P901 for [B], and adjust DAC-P-V.COM-R/DAC-P-V.COM-G/DAC-P-V.COM-B so that the voltage is 9.05±0.05V.
2. After adjusting, set the picture as white blank, then apply heat-run.
3. When the symptom has been resolved, adjust according to the “4-3 Flicker adjustment”.

● Before Replacing the LCD / Lens Prism

You should not replace separately the parts of the liquid crystal LCD / Lens Prism because it works properly only when used together. Therefore, regarding these parts, you can either replace part , LCD / Lens Prism Ass'y, or send the whole unit LCD / Lens Prism Ass'y back to Hitachi, where we will replace the malfunctioning part, recondition the device and send it back to you. In that case please contact our distributor.


G Panel
Don't touch here.
DISTRIBUTOR
• Do not disassemble the unit because replacement of separate parts is not possible.
• For repairs of the product, please contact our distributor.
HITACHI
Replacement of G Panel → Reconditioning
Return
Place horizontally after removing LCD/Lens Prism Ass'y.

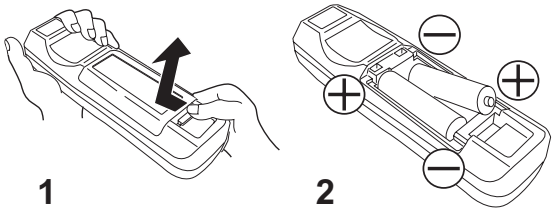
- The LCD/Lens Prism assembly should be installed, facing in the direction as shown on the right figure. Improper installation may distort the convergence.
- Please take care not to jolt the LCD/Lens Prism assembly. This can result in damage to the LCD panel.
- Replacing the LCD/Lens Prism assembly, Be careful for dust is not attached.
  Moreover, Please clean up a duct, air filter, etc.



● Loading the Batteries

Install the AA batteries into the remote control transmitter.

1. Remove the battery cover.
   Push the knob while lifting up the battery cover.
2. Load the batteries.
   Make sure the plus and minus poles are correctly oriented.
3. Close the battery cover.



CAUTION

- Use only the specified batteries with this remote control transmitter. Also, do not mix new and old batteries. This could cause in battery cracking or leakage, which could result in fire or personal injury.
- When loading the batteries, make sure the plus and minus terminals are correctly oriented as indicated in the remote control transmitter. Incorrect orientation could cause battery cracking or leakage, which could result in personal injury or pollution of the surrounding environment.
- When you dispose the battery, you should obey the law in the relative area or country.
- Keep the battery away from children and pets.
- When not to be used for an extended period, remove the batteries from the remote control transmitter.

NOTE: Replace the batteries when remote control transmitter operation becomes difficult.

● Lamp

HIGH VOLTAGE
HIGH TEMPERATURE
HIGH PRESSURE

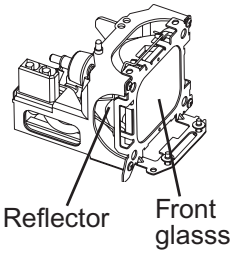
Option Lamp: DT00421

Before replacing the lamp, switch power OFF, remove the power cord from the power outlet, and wait approximately 45 minutes until the lamp has cooled. The lamp may explode if handled at high temperatures.

WARNING

- For disposal of used lamp, treat according to the instruction of community authorities.
- Since the lamp is made of glass, do not apply shock to it and do not scratch it.
- Also, do not use old lamp. This could also cause explosion of the lamp.
- If it is probable that the lamp has exploded (explosive sound is heard), disconnect the power plug from the power outlet and ask your dealer to replace lamp. The lamp is covered by front glass , but, in rare cases, the reflector and the inside of the projector may be damaged by scattered broken pieces of glass, and broken pieces could cause injury when being handled.
- Do not use the projector with the lamp cover removed.

Lamp



Lamp Life

Projector lamps have a finite life. The image will become darker, and hues will become weaker, after a lamp has been used for a long period of time.

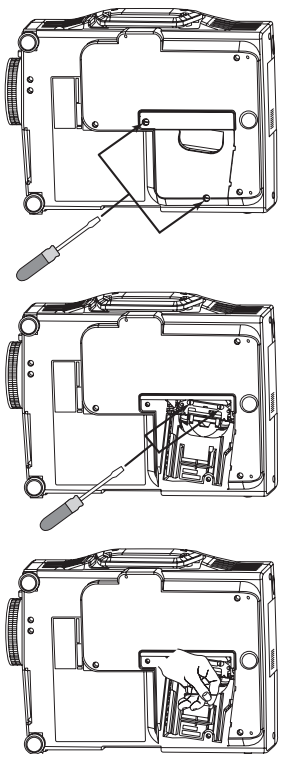
Replace the lamp if the LAMP indicator is red, or the CHANGE THE LAMP message appears when the projector is switched ON. See table 21.

NOTE:

- The LAMP indicator is also red when the lamp unit reaches high temperature. Before replacing the lamp, switch power OFF, wait approximately 20 minutes, and switch power ON again.
- If the LAMP indicator is still red, replace the lamp.

Replacing the Lamp

1. Switch the projector OFF, remove the power cord from the power outlet, and wait at least 45 minutes for the unit to cool.
2. Prepare a new lamp.
3. Check that the projector has cooled sufficiently, and gently turn it upside down.
4. Loosen the two screws as shown in the diagram, and remove the lamp cover.
5. Loosen the two screw, and gently remove the lamp while holding the grips. Touching the inside of the lamp case may result in uneven coloring.
6. Install the new lamp and tighten the two screw firmly. Also steadily push the opposite side of the screwed lamp into the unit.
7. Replace the lamp cover in position and tighten the screw firmly.
8. Gently turn the projector right-side up.



CAUTION

- Ensure that screws are tightened properly. Screws not tightened fully may result in injury or accidents.
- Do not use the projector with the lamp cover removed.

Resetting the Lamp Timer

Reset the lamp timer after replacing the lamp. When the lamp has been replaced after the LAMP indicator is red, or the CHANGE THE LAMP message is displayed, complete the following operation within ten minutes of switching power ON. The power will be turned off automatically in over 10 minutes.

1. Switch power ON, and press the RESET button, for approximately three seconds. The 'LAMP xxxx hr' message will appear on the lamp timer on the bottom of the screen.
2. Press the MENU button on the remote control transmitter, or the RESET button on the control panel, while the lamp timer is displayed. The 'LAMP xxxx ☐ → 0 ■ CANCEL' message will then appear.
3. Press the ◄ and select 0, and wait until the timer display is cleared.

NOTE:

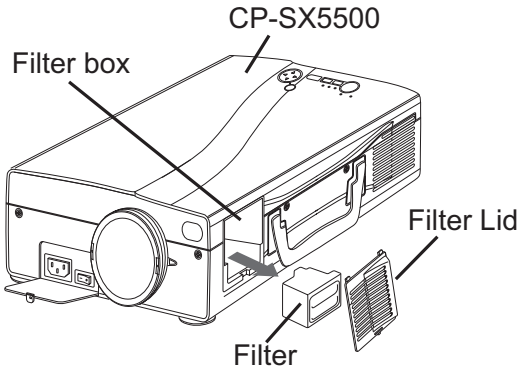
- Do not reset the lamp timer without replacing the lamp. Reset the lamp timer always when replacing the lamp. The message functions will not operate properly if the lamp timer is not reset correctly.
- An air filter is attached to the optional lamp. Replace the filter after replacing the lamp.

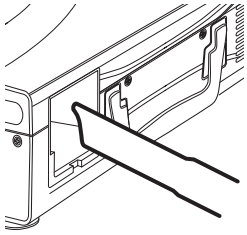
● Air Filter

Replacing the Air Filter

Replace the air filter if contamination cannot be removed, or if it is damaged.

1. Remove the filter lid.
2. Pull and remove the old filter from the filter box.
3. Insert the new filter to the filter box. Push left and right edges of the filter with fingers in order to fit the filter to the box properly. Check that there is no gap between the filter and plastics at top, left and right side edge of the filter.
4. Set the filter lid.





Please clean with a vacuum cleaner.

Cleaning the air Filter

The air filter should be cleaned as described below at intervals of approximately 300 hours.

1. Switch the projector power supply OFF, and remove the power cord from the power outlet.
2. Clean the air filter with a vacuum cleaner.

Option Air filter: MN03701

CAUTION

- Switch power OFF and remove the power cord from the power outlet before beginning maintenance work. Please read the separate “SAFETY INSTRUCTIONS” thoroughly to ensure that maintenance is performed correctly.
- Replace the air filter if contamination cannot be removed, or if it is damaged. Contact your dealer in such case.
- Do not use the equipment with the air filter removed.
- When the air filter is clogged with dust etc. the power supply is switched OFF automatically to prevent the temperature rising inside the projector.

Message table

OSD Message

The messages as described below may appear on the screen at power ON. Take the appropriate measures when such a message appears.

Message	Contents
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. *1)	The message shown at left appears after the lamp has been used for more than 1300 hours. The lamp is approaching the end of its life. Power is switched OFF automatically when the lamp reaches the end of its life. Prepare a new lamp for installation. Always reset the lamp timer after replacing the lamp.
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. THE POWER WILL TURN OFF AFTER ** hr. *1)	The lamp will reach the end of its life in ** hours. Power will be switched OFF automatically in ** hours. Replace the lamp as shown in P.20~21 “Lamp”. Always reset the lamp timer after replacing the lamp.
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. THE POWER WILL TURN OFF AFTER 0 hr.	The lamp has reached the end of its life. Power will be switched OFF in a few minutes. Switch power OFF immediately and replace the lamp as shown in P.20~21 “Lamp”. Always reset the lamp timer after replacing the lamp.
NO INPUT IS DETECTED ON ***	No input signal found. Check signal input connections and signal sources.
SYNC IS OUT OF RANGE ON ***	The horizontal or vertical frequency of the input signal is not within the specified range. Check the specifications of the equipment and the signal source.

NOTE:

*1) This message is cleared automatically after approximately three minutes, and appears every time power is switched ON.

Indicators Message

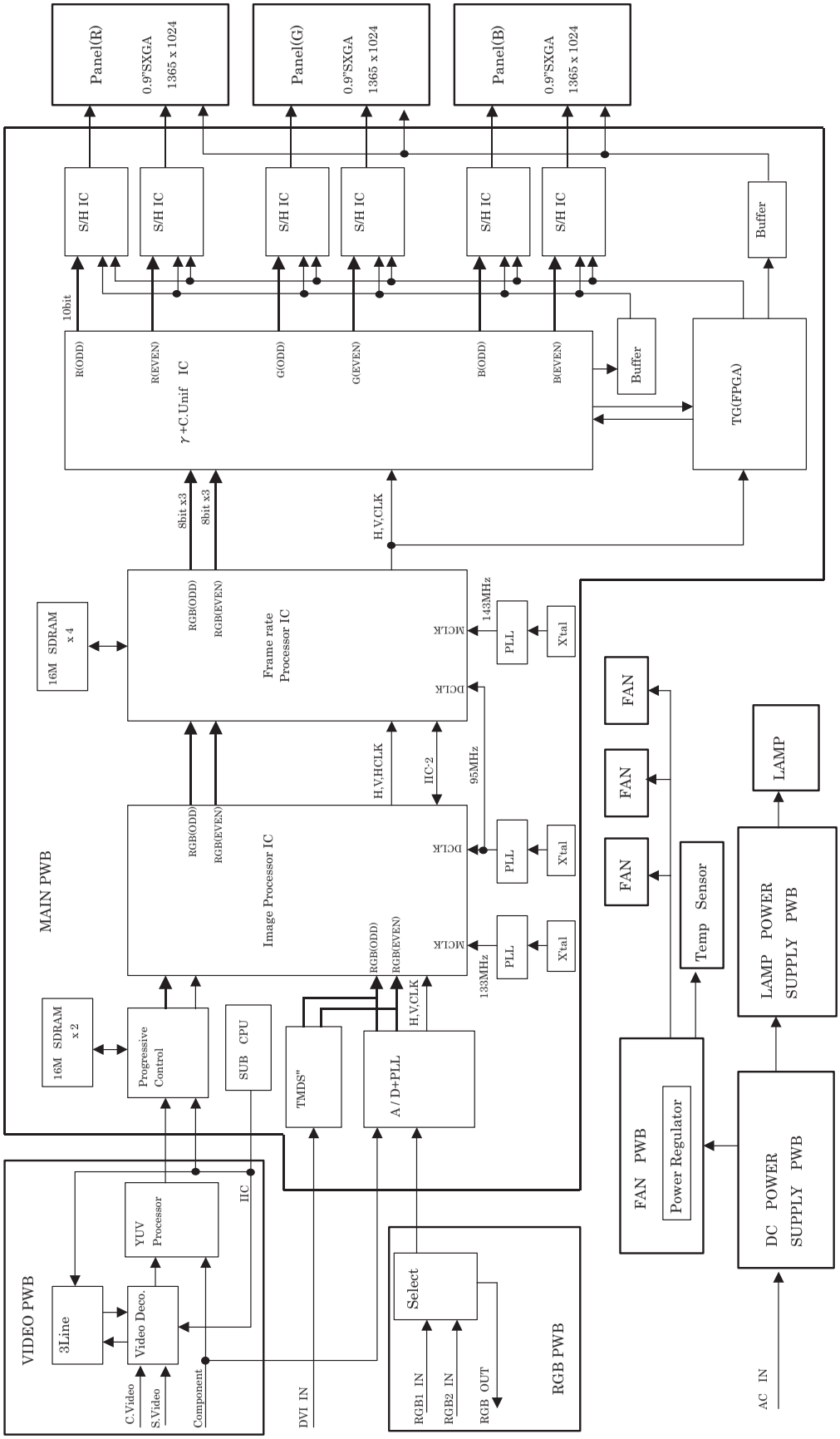
The POWER indicator, LAMP indicator, and TEMP indicator are lit and blank as follows. Take the appropriate measures.

STANDBY/ON indicator	LAMP indicator	TEMP indicator	Contents
Lights orange	Turns off	Turns off	The Standby mode has been set.
Blinks green	Turns off	Turns off	Warming up. Please wait.
Lights green	Turns off	Turns off	ON. Normal operation possible.
Blinks orange	Turns off	Turns off	Cooling. Please wait.
Lights red	Lights red	Turns off	Lamp is not lit. The interior of the equipment may be too hot. Switch power OFF, wait 20 minutes until the equipment cools, and check whether the ventilation openings are blocked, whether the air filter is dirty, or whether the ambient temperature exceeds 35°C. And switch power ON again. Replace the lamp if the same problem occurs.
Lights red	Blinks red	Turns off	Lamp or lamp cover is not found, or hasn't been fitted in correctly. Switch power OFF, and wait for 45 minutes until the equipment cools. Check fitting of the lamp and lamp cover, and switch power ON again. Contact your dealer if the same problem occurs again.
Lights red	Turns off	Blinks red	The cooling fan is not operating. Switch power OFF, and wait for 20 minutes until the equipment cools. Check for foreign matters in the fan, and switch power ON again. Contact your dealer if the same problem occurs again.

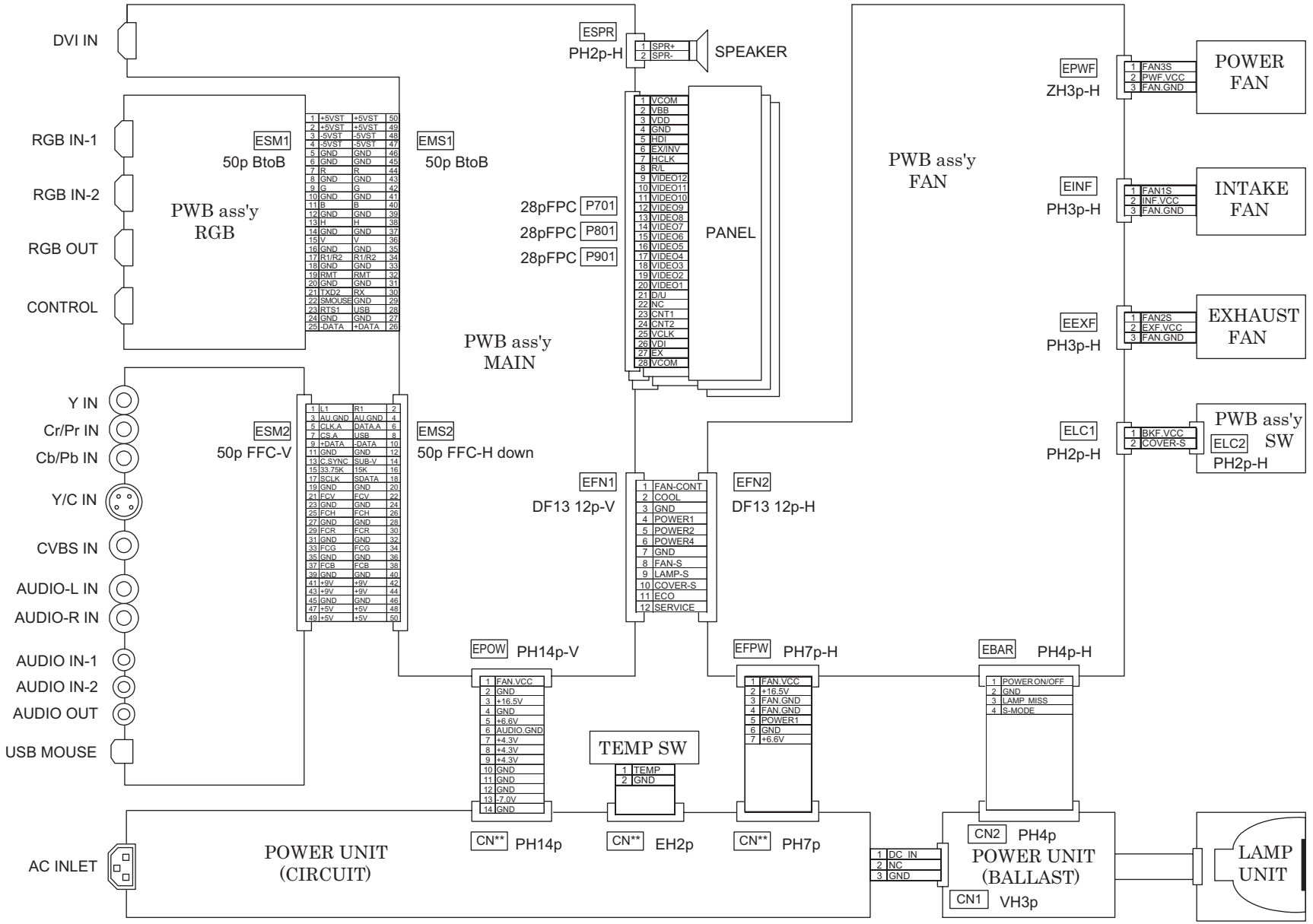
NOTE:

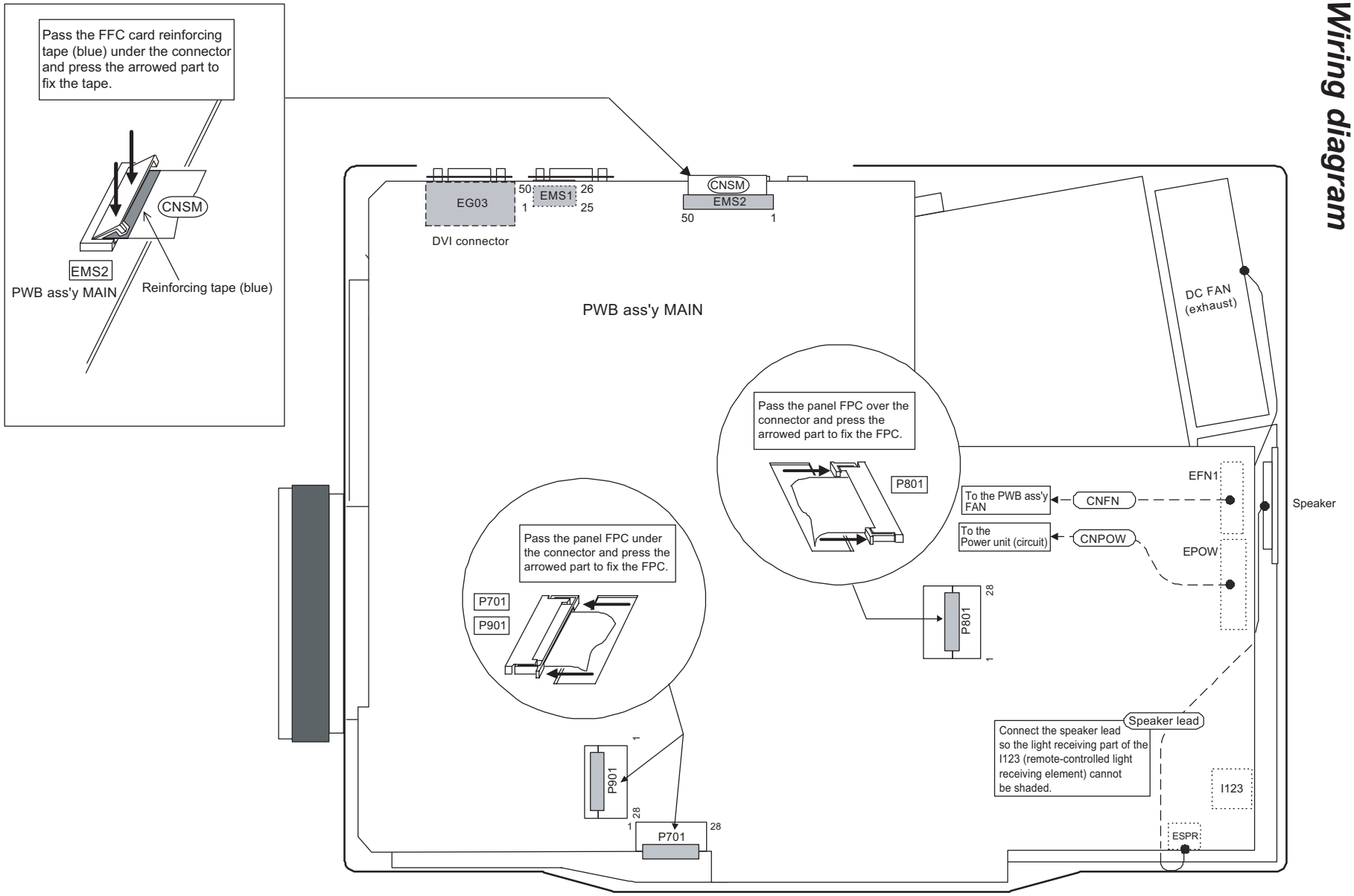
*1) When the internal temperature becomes excessive power is switched OFF automatically for safety reasons, and the indicator is extinguished. Set the power switch to [○] and wait for 20 minutes until the equipment has cooled sufficiently.

7. Block diagram



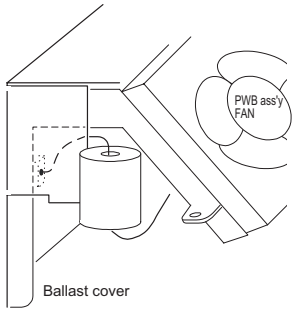
8. Connector connection diagram



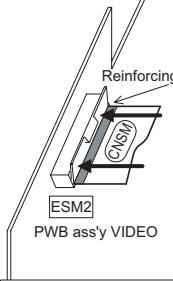


With PWB ass'y MAIN

Connect the lead between the Power unit (circuit) and the Power unit (ballast) so the lead core is outside the ballast cover as illustrated below.

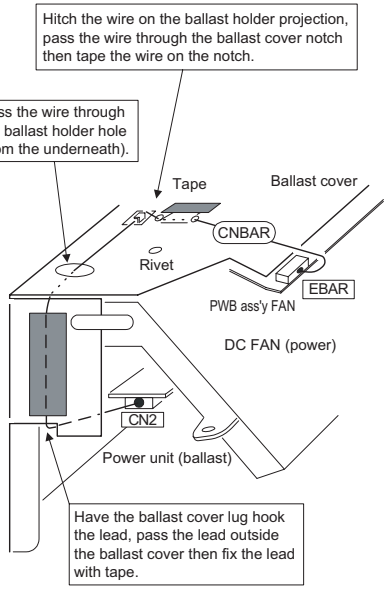


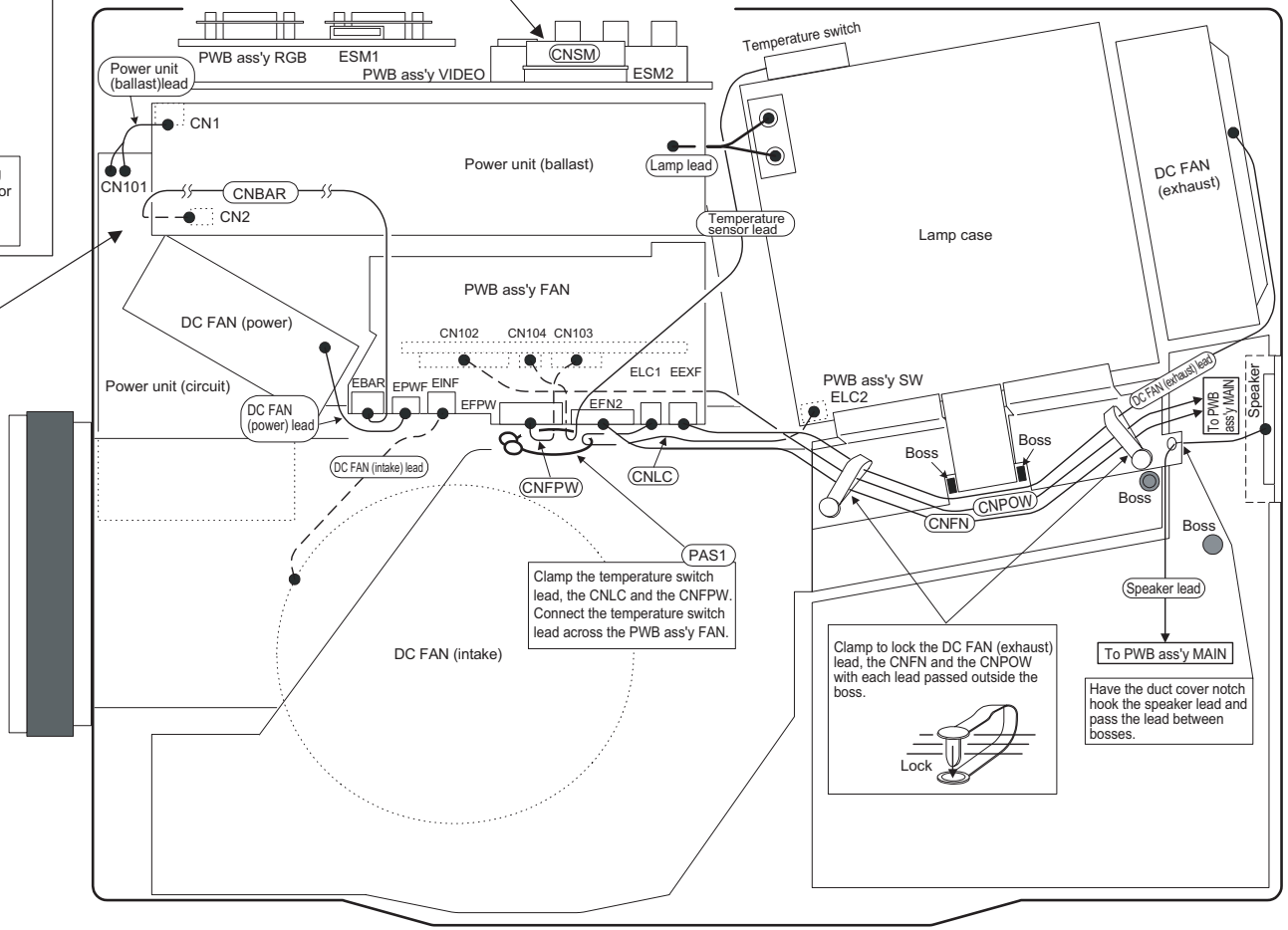
Insert the PWB ass'y VIDEO FFC card while preparing the total assembly.



Pass the FFC card reinforcing tape (blue) under the connector and press the arrowed part to fix the tape.

When installing the ballast cover, connect the CNBAR as illustrated below:

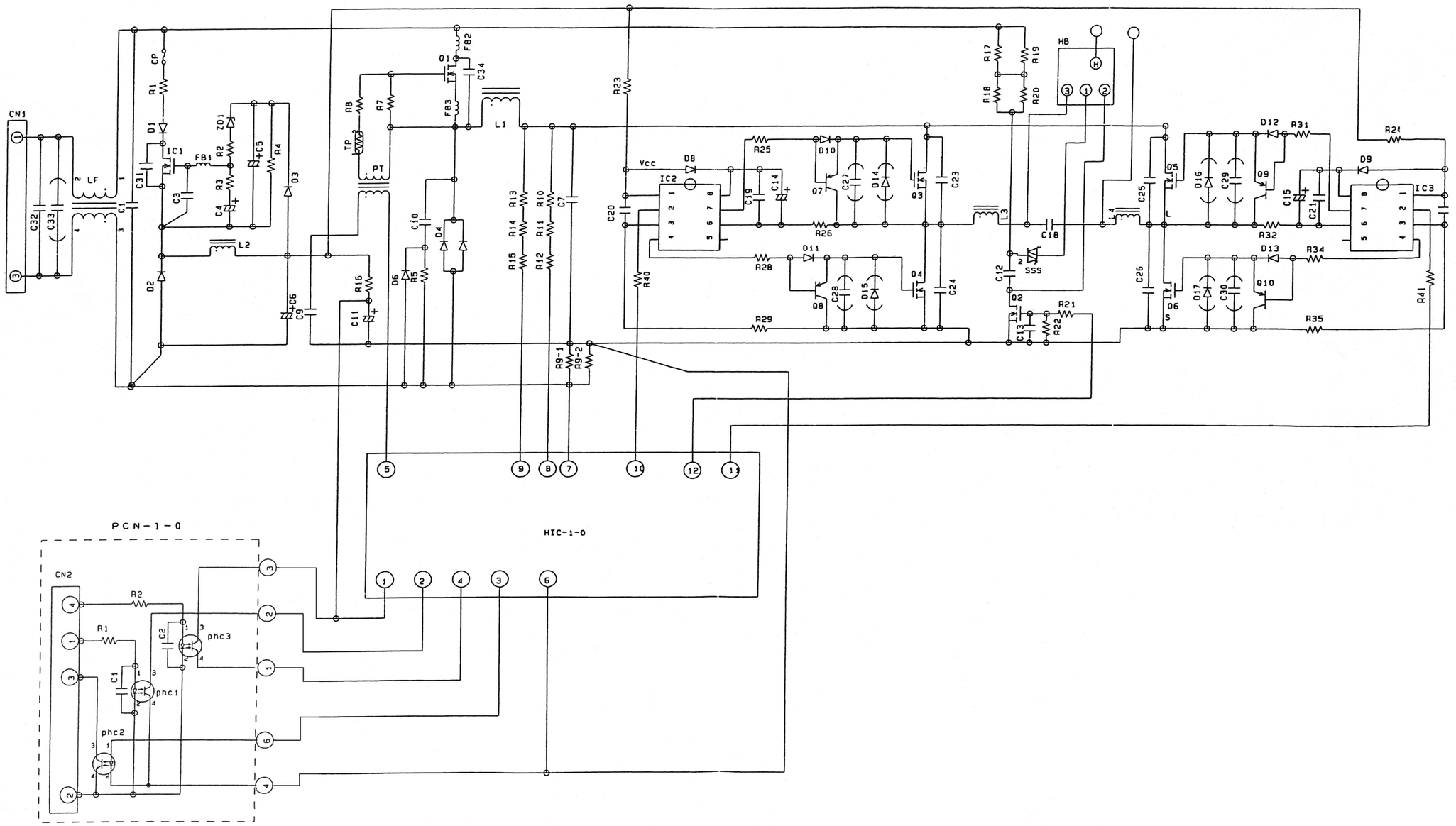

Hitch the wire on the ballast holder projection, pass the wire through the ballast cover notch then tape the wire on the notch.
Pass the wire through the ballast holder hole (from the underneath).
Tape
Ballast cover
CNBAR
Rivet
EBAR
PWB ass'y FAN
DC FAN (power)
CN2
Power unit (ballast)
Have the ballast cover lug hook the lead, pass the lead outside the ballast cover then fix the lead with tape.



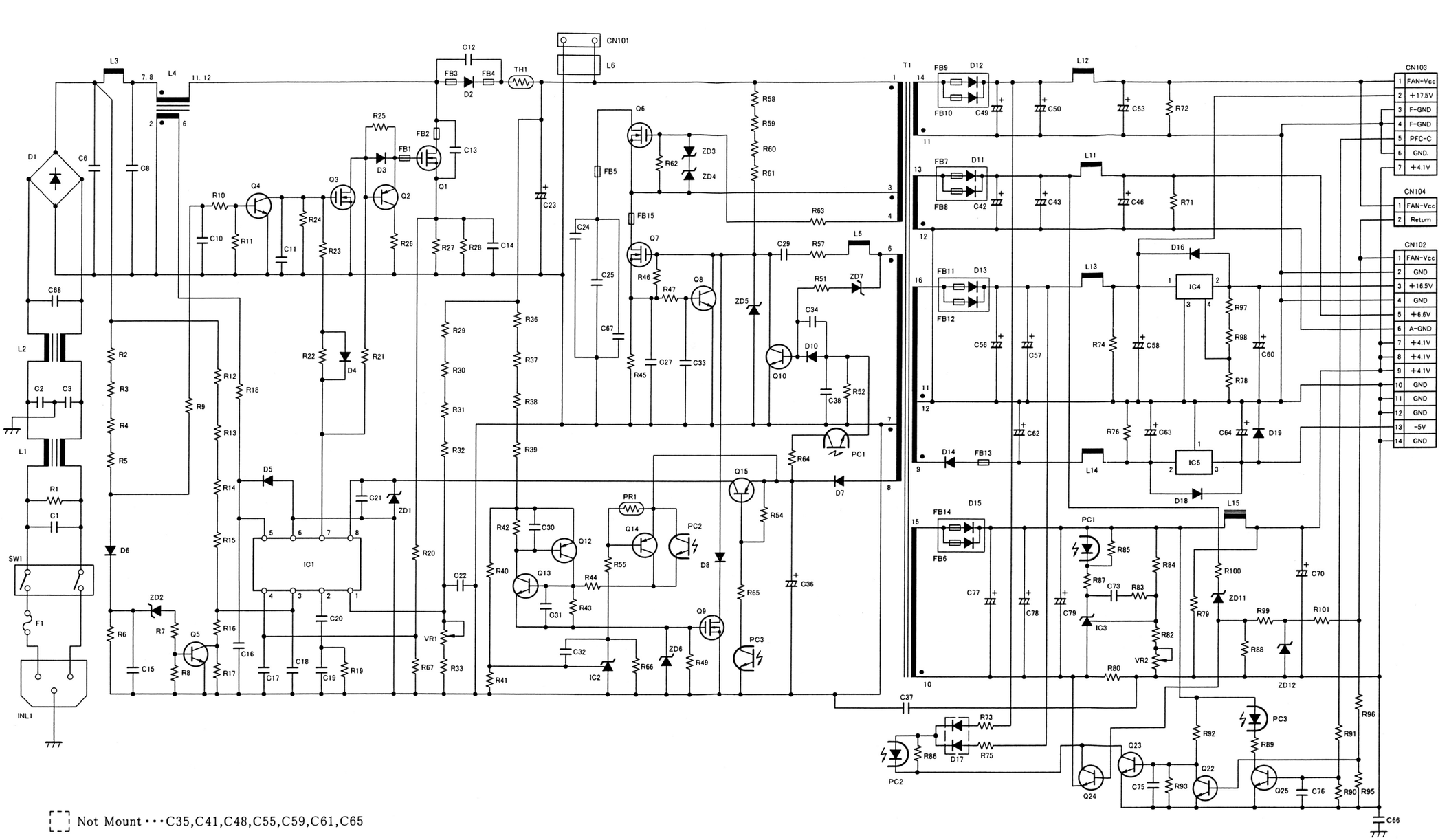
Without PWB ass'y MAIN

10. Basic circuit diagram

Parts with hatching are not mounted.



POWER UNIT (BALLAST)(C5SXR)



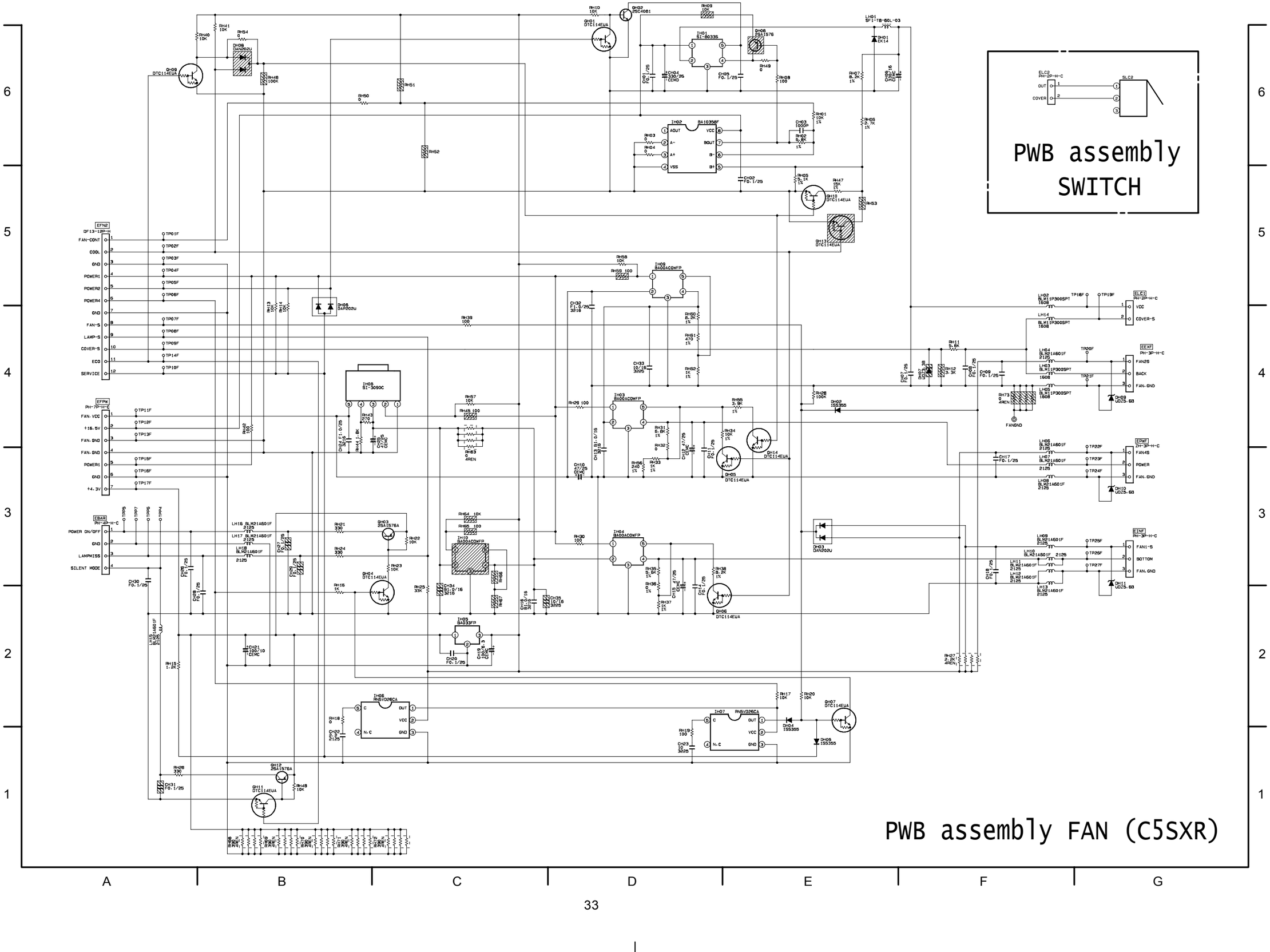
Not Mount ･･･C35,C41,C48,C55,C59,C61,C65

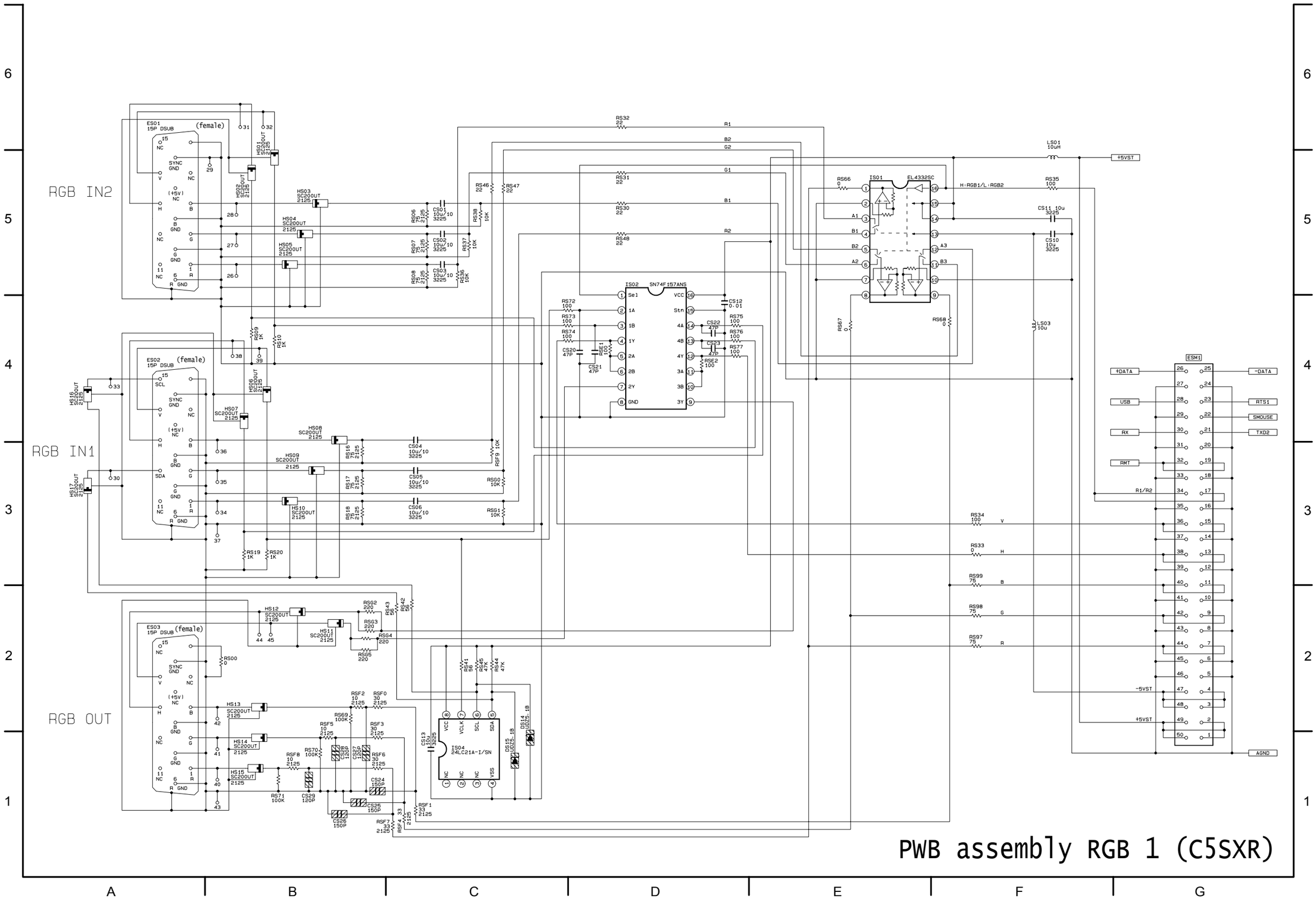
Resistors value unless otherwise specified are in ohm,1/10W.

Resistors value unless otherwise specified are 5% of tolelance.

Capacitors value unless otherwise specified are in Farad,50V.

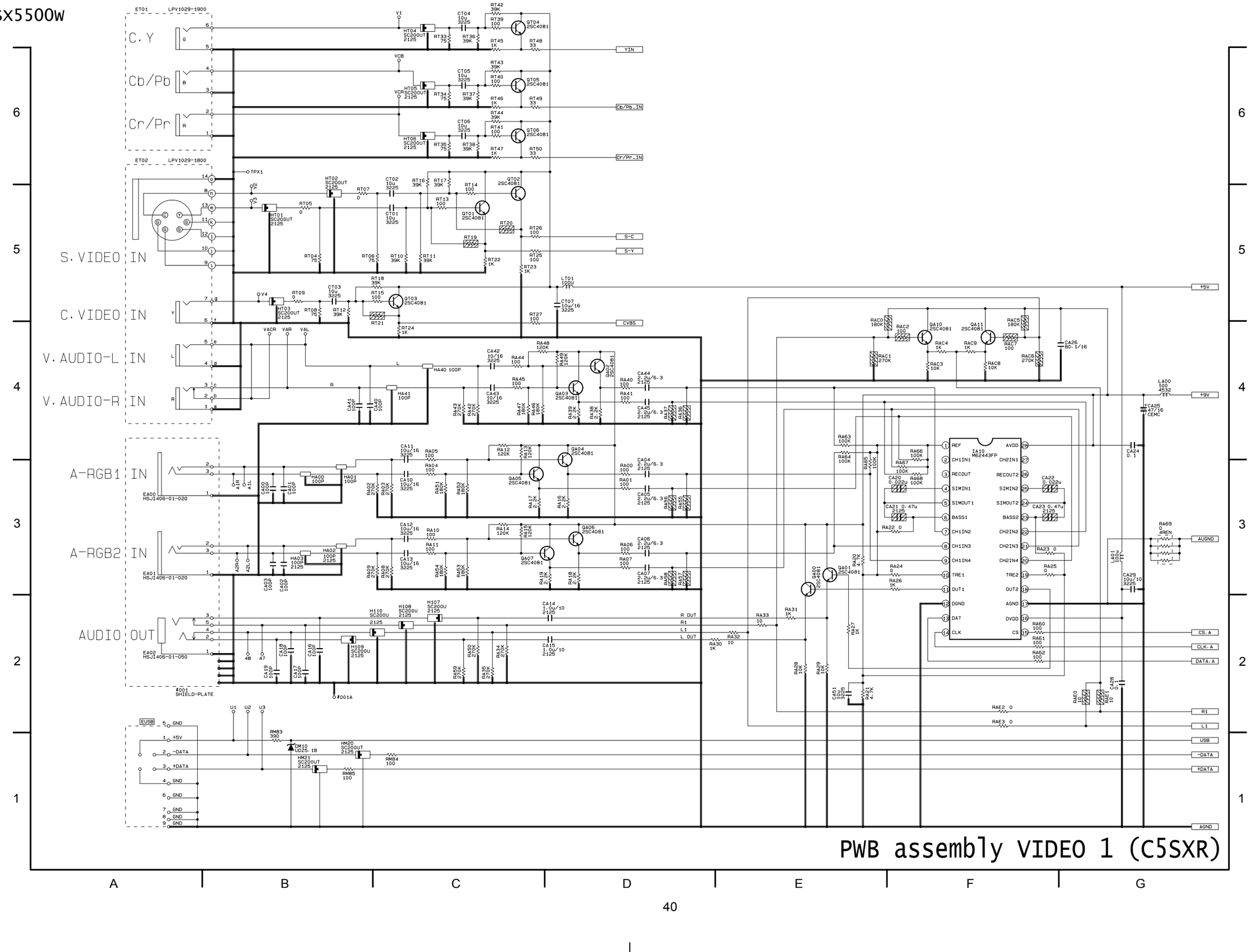
POWER UNIT (CIRCUIT)(C5SXR)


PWB assembly SWITCH
PWB assembly FAN (C5SXR)
EFN2
DF13-12P-H
FAN-CONT
COOL
GND
POWER1
POWER2
POWER4
GND
FAN-S
LAMP-S
COVER-S
ECO
SERVICE
EFPW
PH-7P-H-C
FAN-VCC
+16.5V
FAN.GND
FAN.GND
POWER1
GND
+4.3V
EBAR
PH-4P-H-C
POWER ON/OFF
GND
LAMPMISS
SILENT MODE
ELC2
PH-2P-H-C
OUT
COVER
SLC2
ELC1
PH-2P-H-C
VCC
COVER-S
EEXF
PH-3P-H-C
FAN2S
BACK
FAN.GND
EFNF
PH-3P-H-C
FAN4S
POWER
FAN.GND
EINF
PH-3P-H-C
FAN1-S
BOTTOM
FAN.GND
IH01 SI-80335
IH02 BA10358F
IH03 BA00ACONFP
IH04 BA00ACONFP
IH05 BA00ACONFP
IH06 BA00ACONFP
IH07 RN5VD26CA
IH08 RN5VD26CA
IH09 SI-3090C
IH10 BA033FP
QH01 DTC114EUA
QH02 2SC4081
QH03 2SA1576A
QH04 DTC114EUA
QH05 DTC114EUA
QH06 DTC114EUA
QH07 DTC114EUA
QH08 DTC114EUA
QH09 DTC114EUA
QH10 DTC114EUA
QH11 DTC114EUA
QH12 2SA1576A
QH13 DTC114EUA
QH14 DTC114EUA
QH15 2SA1576A
DH01 EK14
DH02 1SS355
DH03 DAN202U
DH04 1SS355
DH05 1SS355
DH06 DAN202U
DH07 1SS355
DH08 DAN202U
DH09 UDZ5.6B
DH10 UDZ5.6B
DH11 UDZ5.6B
LH01 SF1-TB-60L-03
TP01F
TP02F
TP03F
TP04F
TP05F
TP06F
TP07F
TP08F
TP09F
TP14F
TP10F
TP11F
TP12F
TP13F
TP15F
TP16F
TP17F
TP18F
TP19F
TP20F
TP21F
TP22F
TP23F
TP24F
TP25F
TP26F
TP27F
FANGND

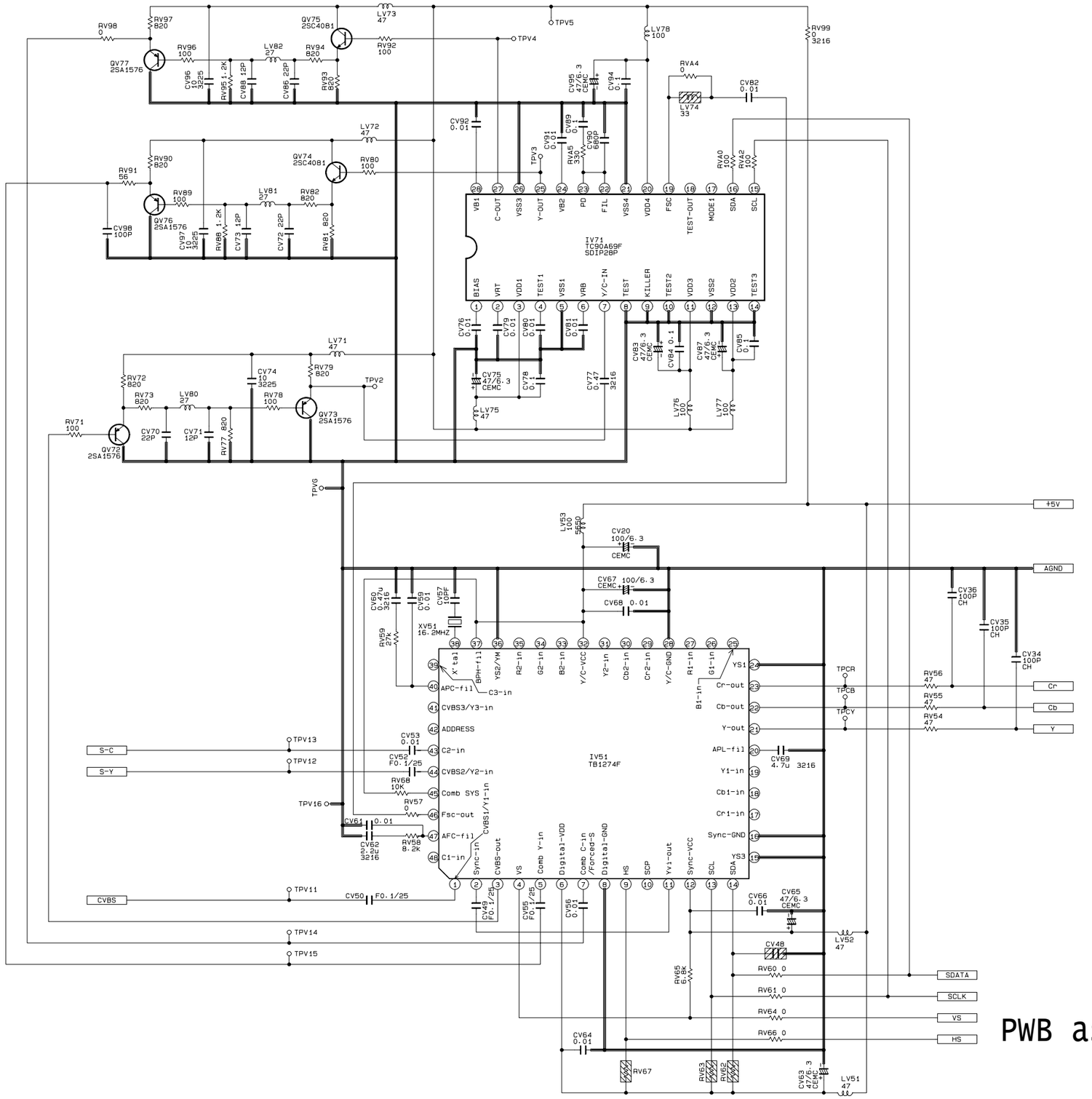

RGB IN2
RGB IN1
RGB OUT
ES01 15P DSUB (female)
ES02 15P DSUB (female)
ES03 15P DSUB (female)
IS01 EL4332SC
IS02 SN74F157ANS
IS04 24LC21A-I/SN
ESM1
+5VST
-5VST
+DATA
-DATA
USB
RTS1
RX
SMOUSE
RMT
TXD2
R1/R2
H:RGB1/L:RGB2
AGND
PWB assembly RGB 1 (C5SXR)

PWB assembly RGB 2 (C5SXR)

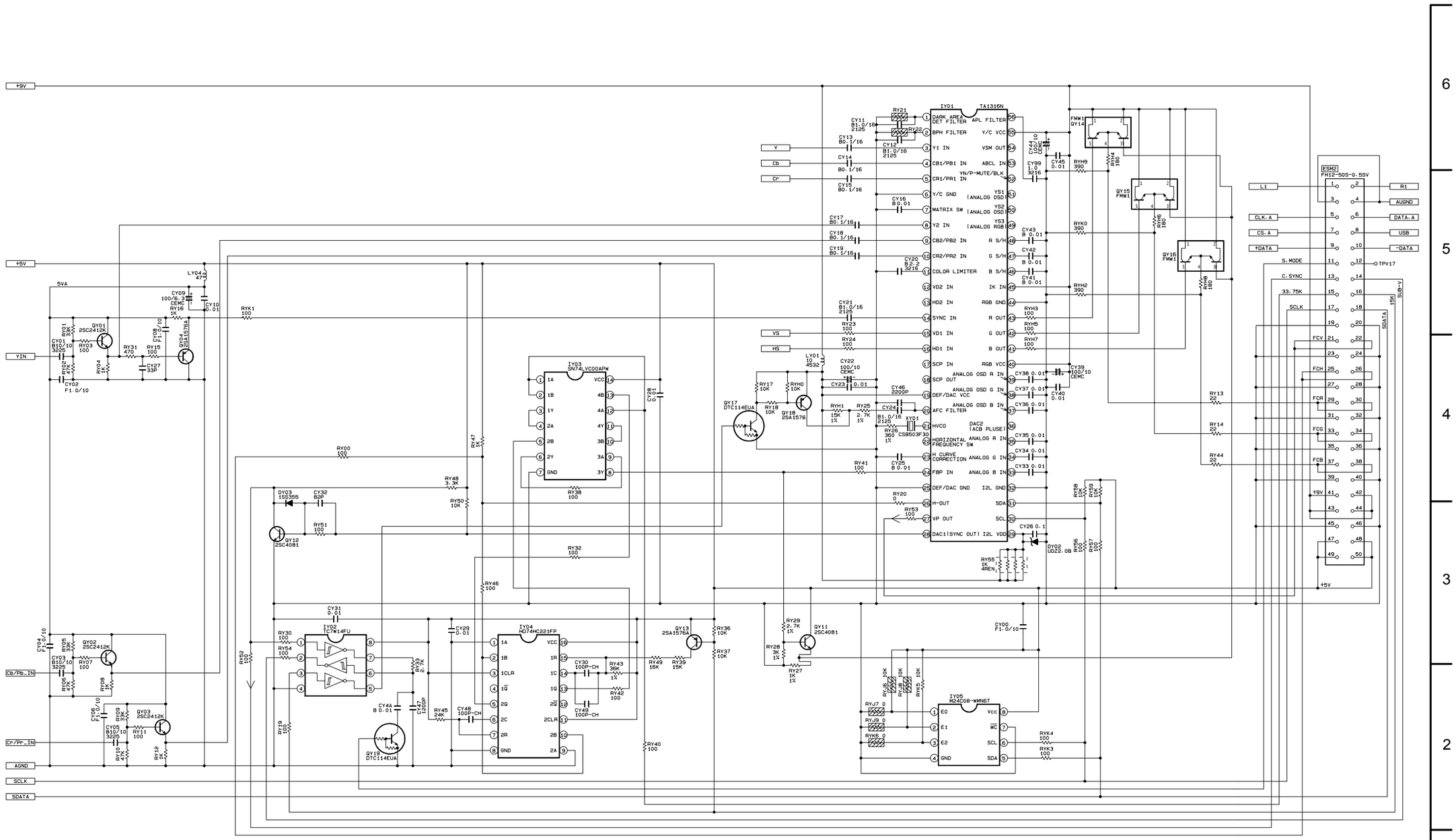
CP-SX5500W



39 40

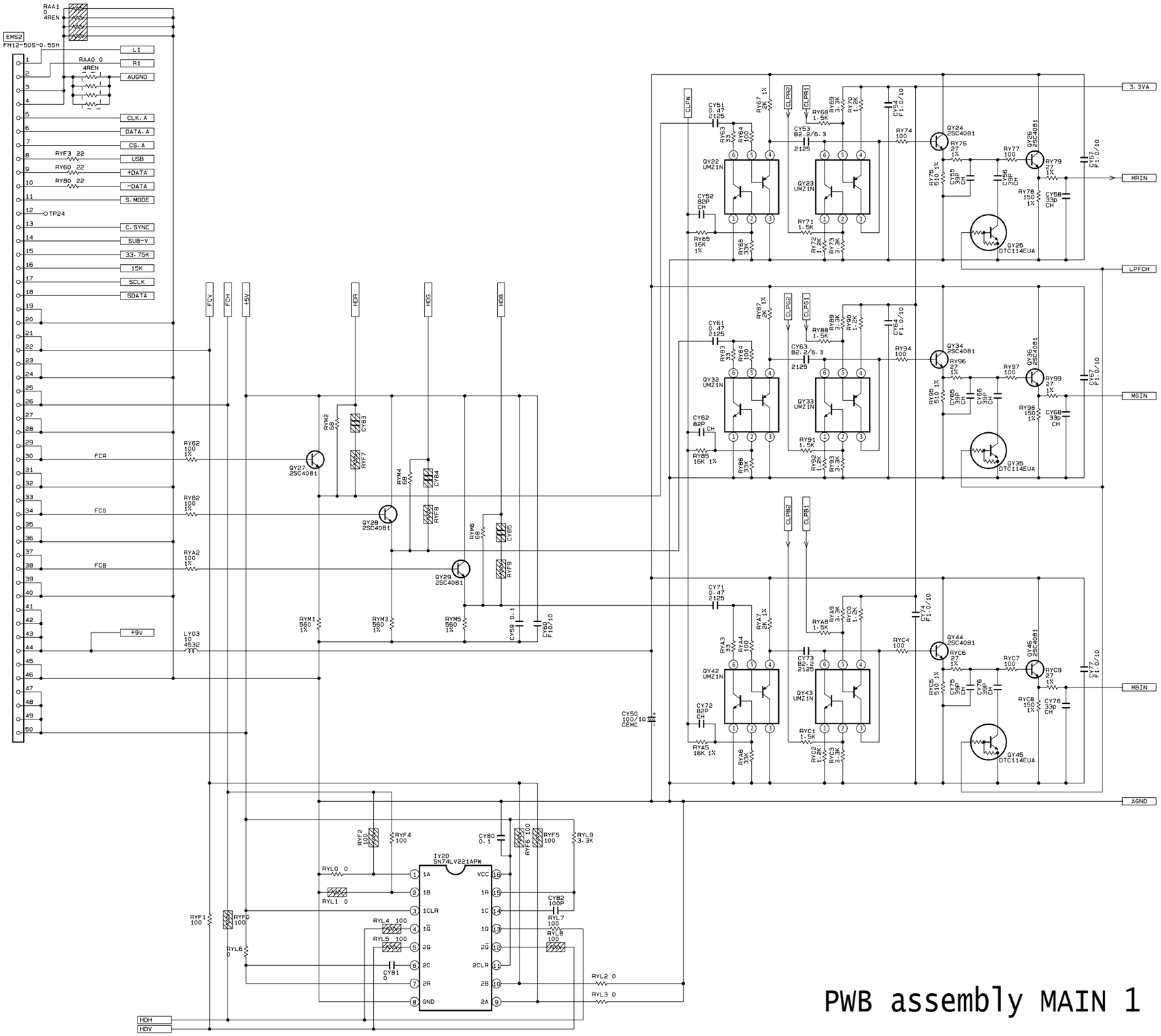


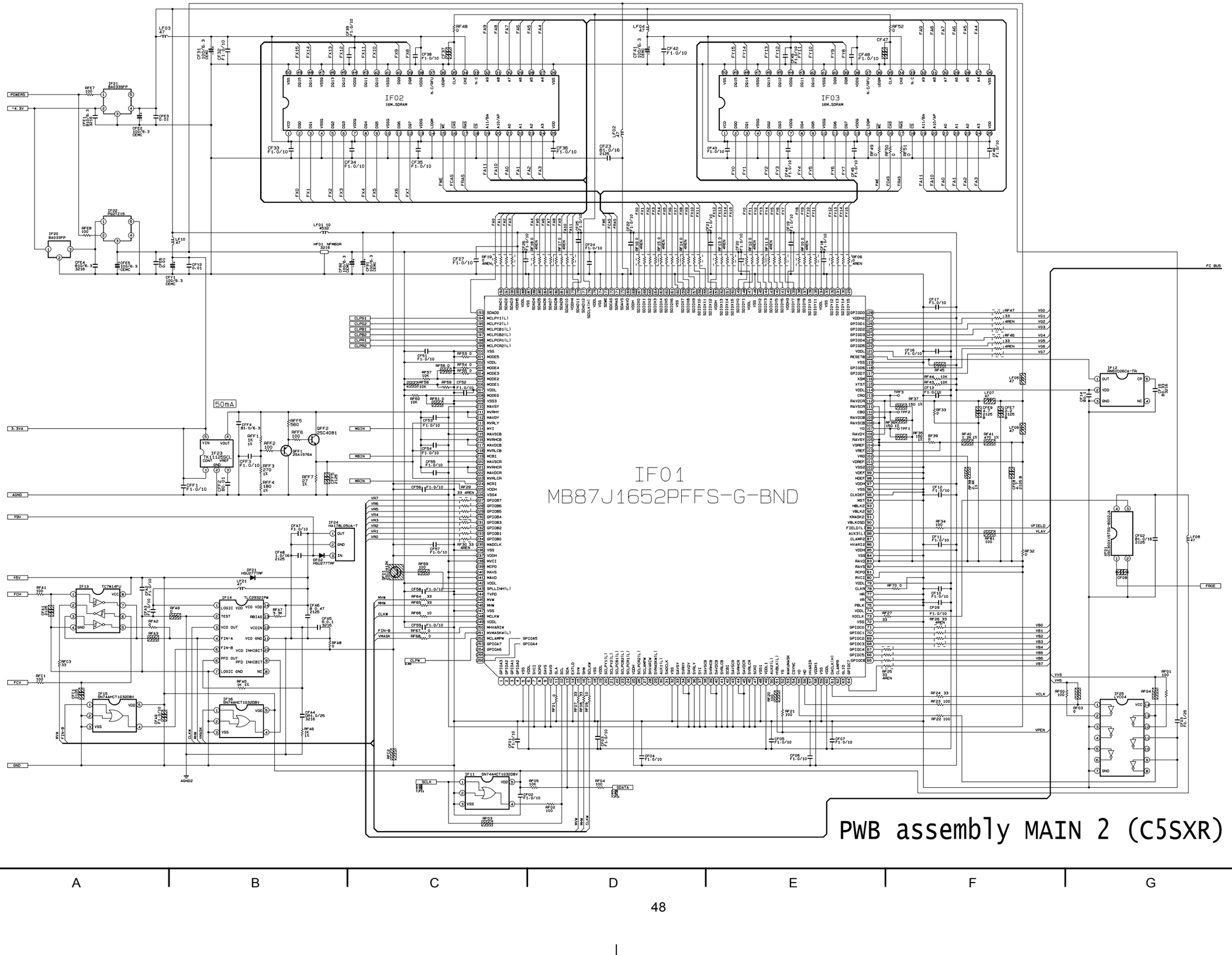
PWB assembly VIDEO 2 (C5SXR)

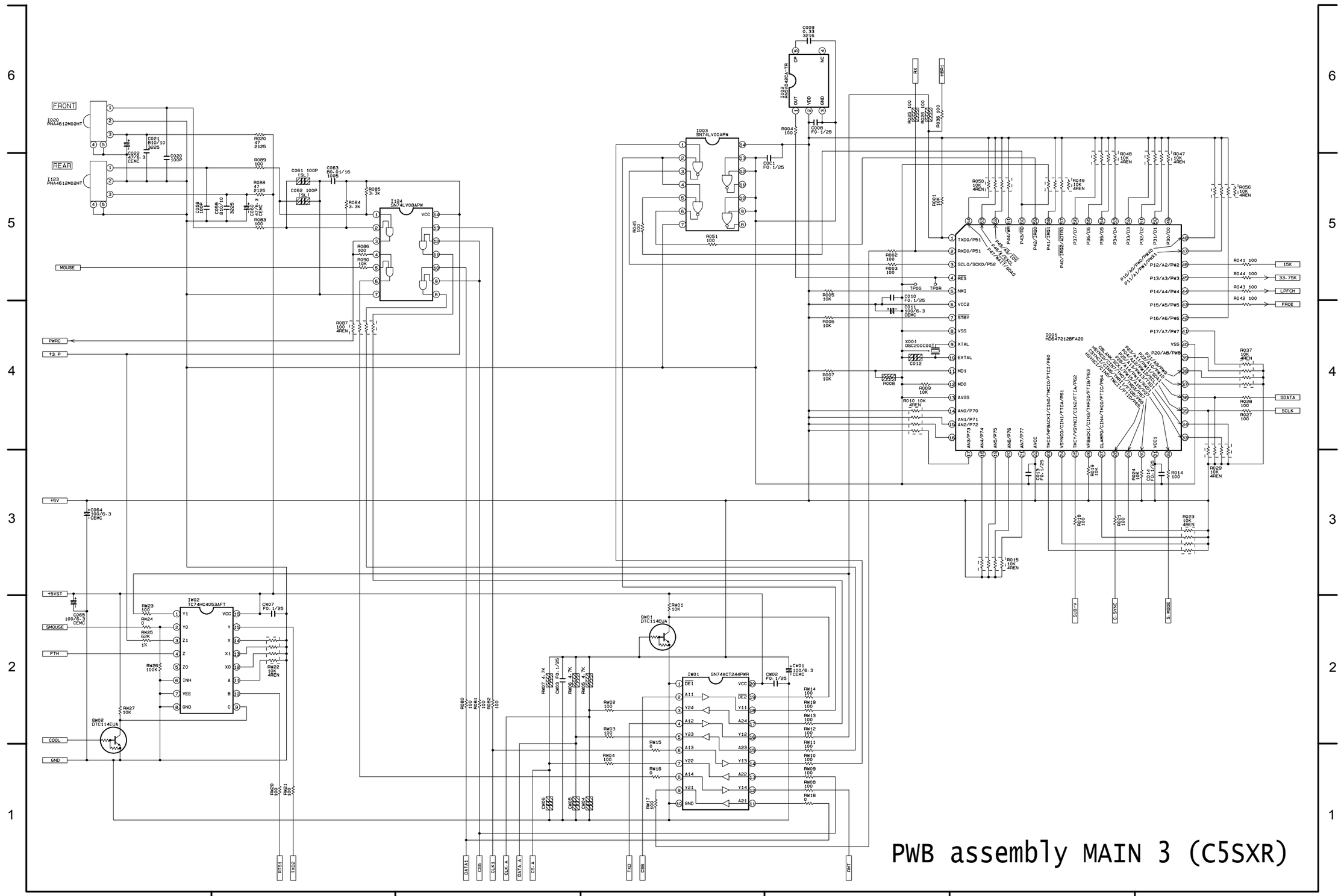


PWB assembly VIDEO 3 (C5SXR)

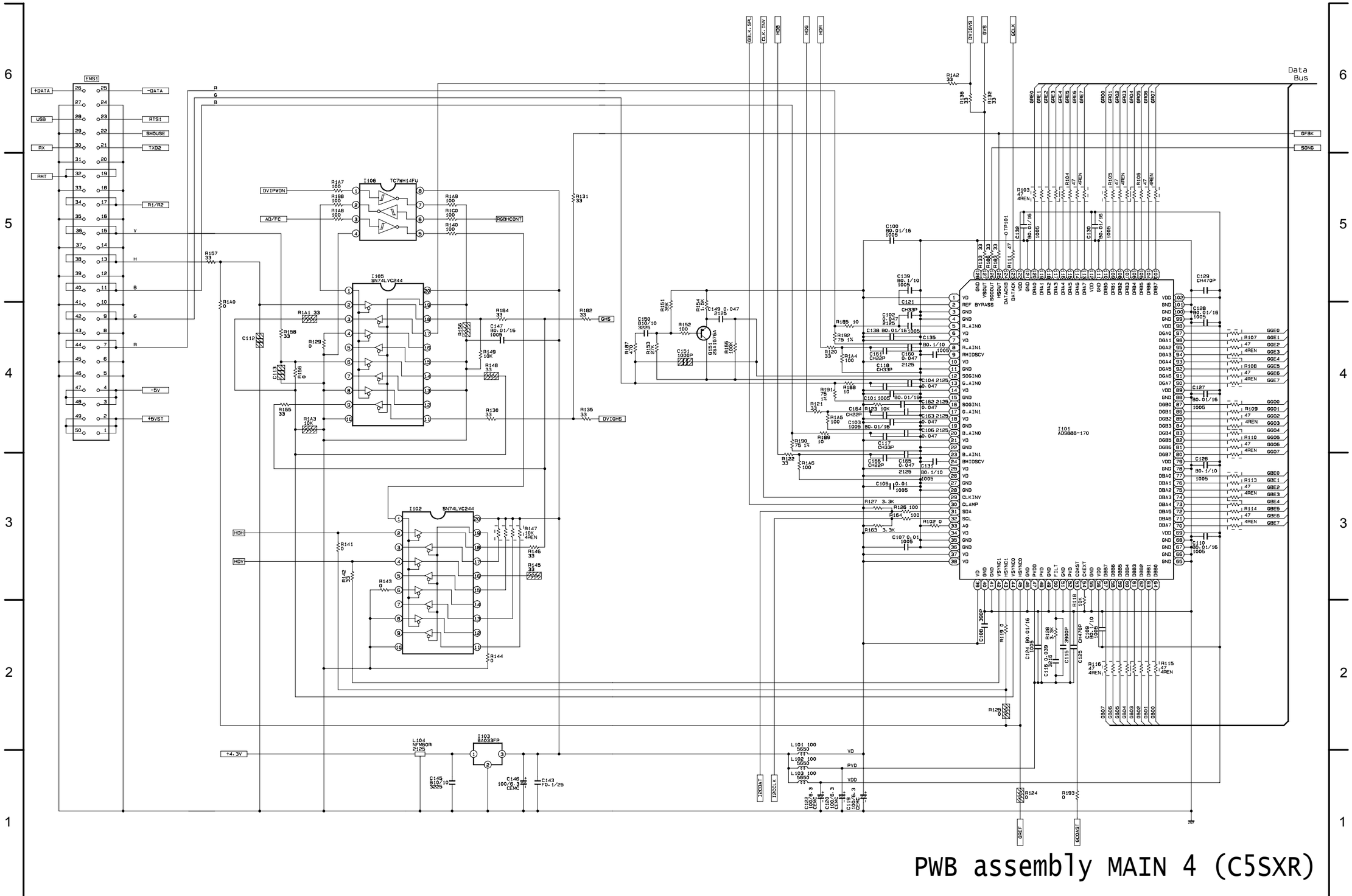
PWB assembly MAIN 1 (C5SXR)



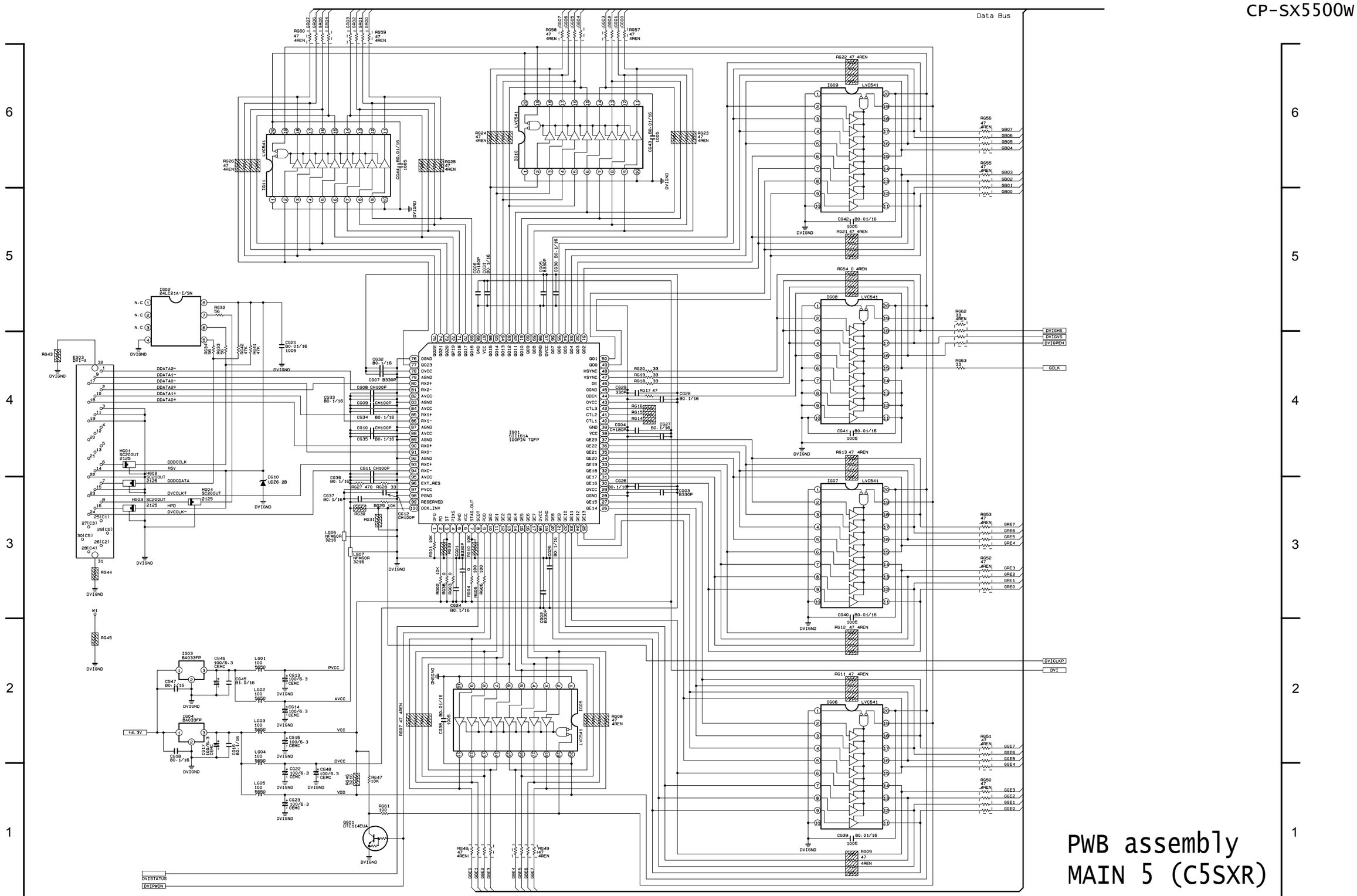

IF01
MB87J1652PFFS-G-BND
IF02
16M_SDRAM
IF03
16M_SDRAM
50mA
FC BUS
PWB assembly MAIN 2 (C5SXR)

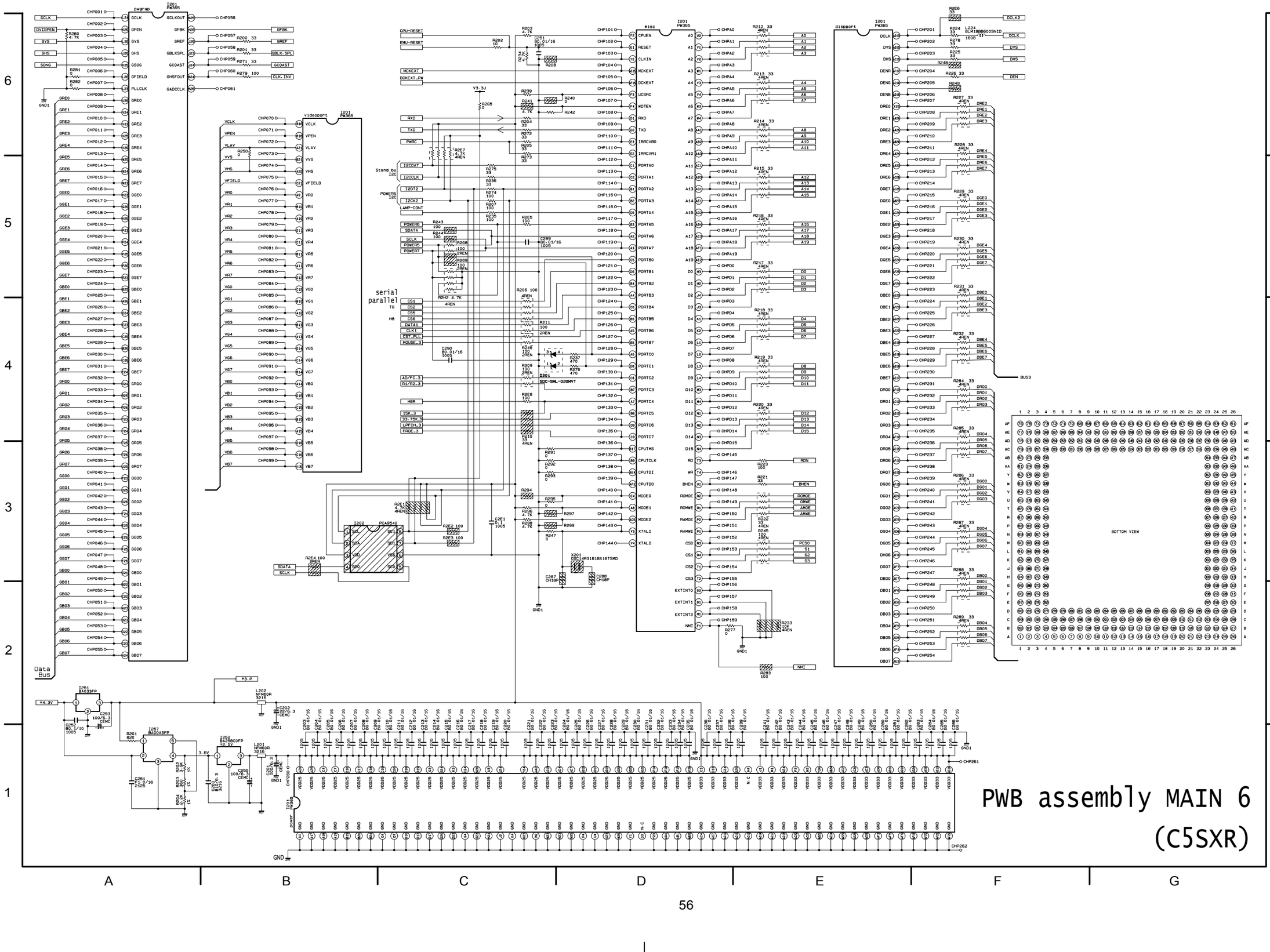


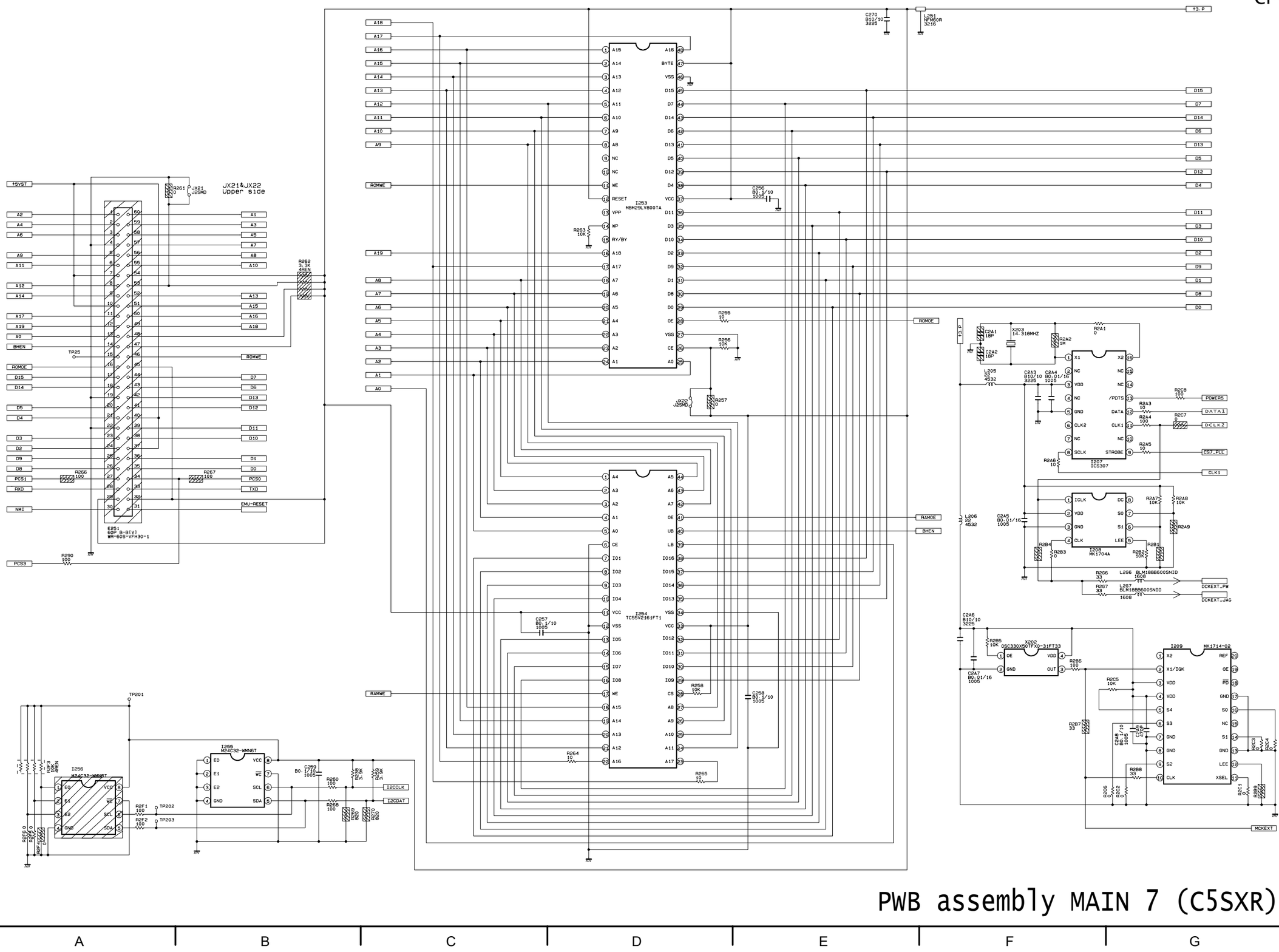
PWB assembly MAIN 3 (C5SXR)



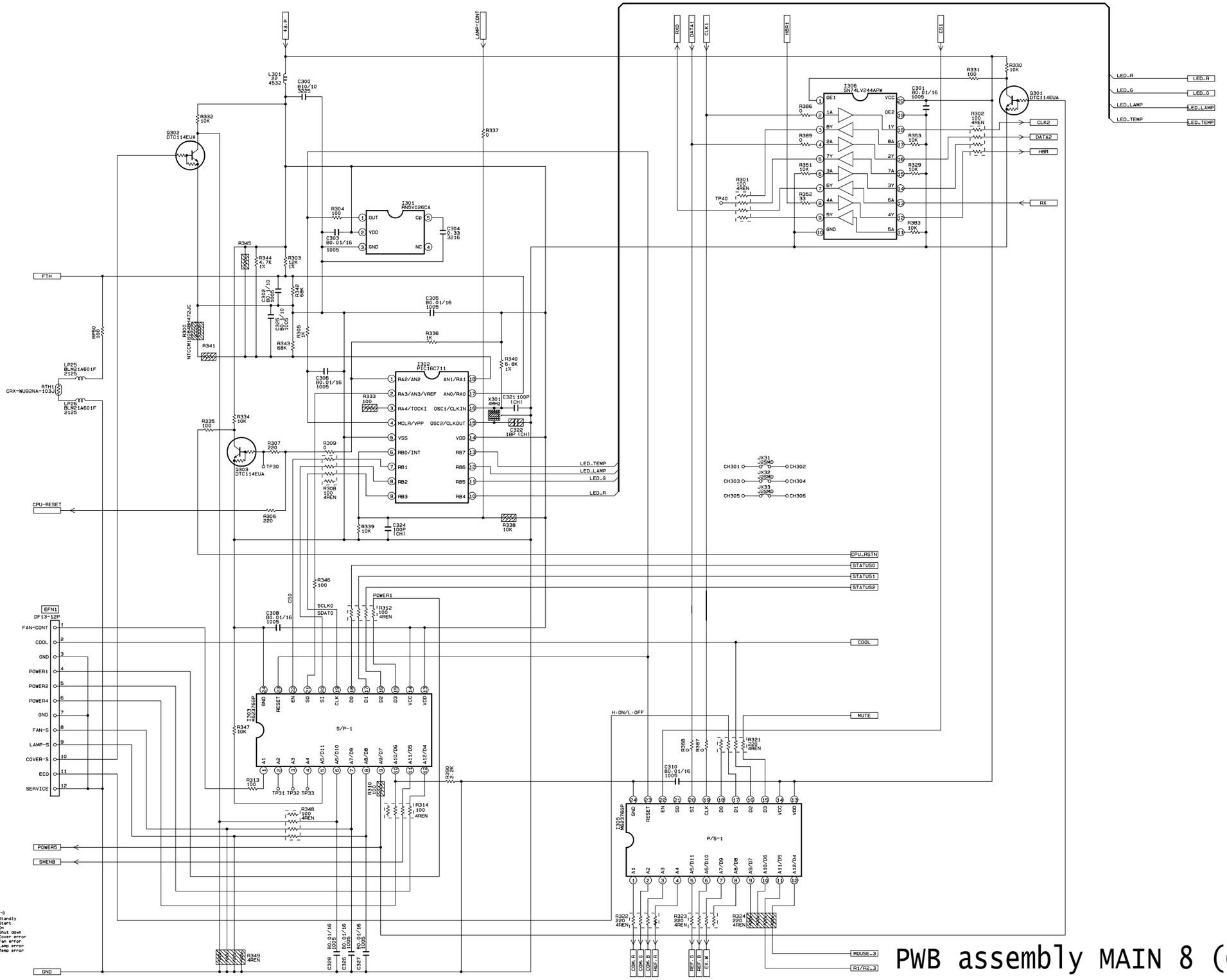
PWB assembly MAIN 4 (C5SXR)


Data Bus
IG01 SII161A 100PIN TQFP
IG02 24LC21A-I/SN
IG03 BA033FP
IG04 BA033FP
IG05 LVC541
IG06 LVC541
IG07 LVC541
IG08 LVC541
IG09 LVC541
IG10 LVC541
IG11 LVC541
HG01 SC200UT 2125
HG02 SC200UT 2125
HG03 SC200UT 2125
HG04 SC200UT 2125
DG01 DTC114EUA
DG10 UDZ6.2B
LG01 100 5050
LG02 100 5050
LG03 100 5050
LG04 100 5050
LG05 100 5050
LG06 NFM60R 3216
LG07 NFM60R 3216
DVIGND
DVDDCLK
DVDDCDATA
DVCCLK+
DVCCLK-
DVHPD
+5V
+4.3V
PVCC
AVCC
VCC
DVCC
VDD
DVIGHS
DVIGVS
DVIGPEN
GCLK
DVICLKP
DVI
DVISTATUS
DVIPWON
PWB assembly
MAIN 5 (C5SXR)

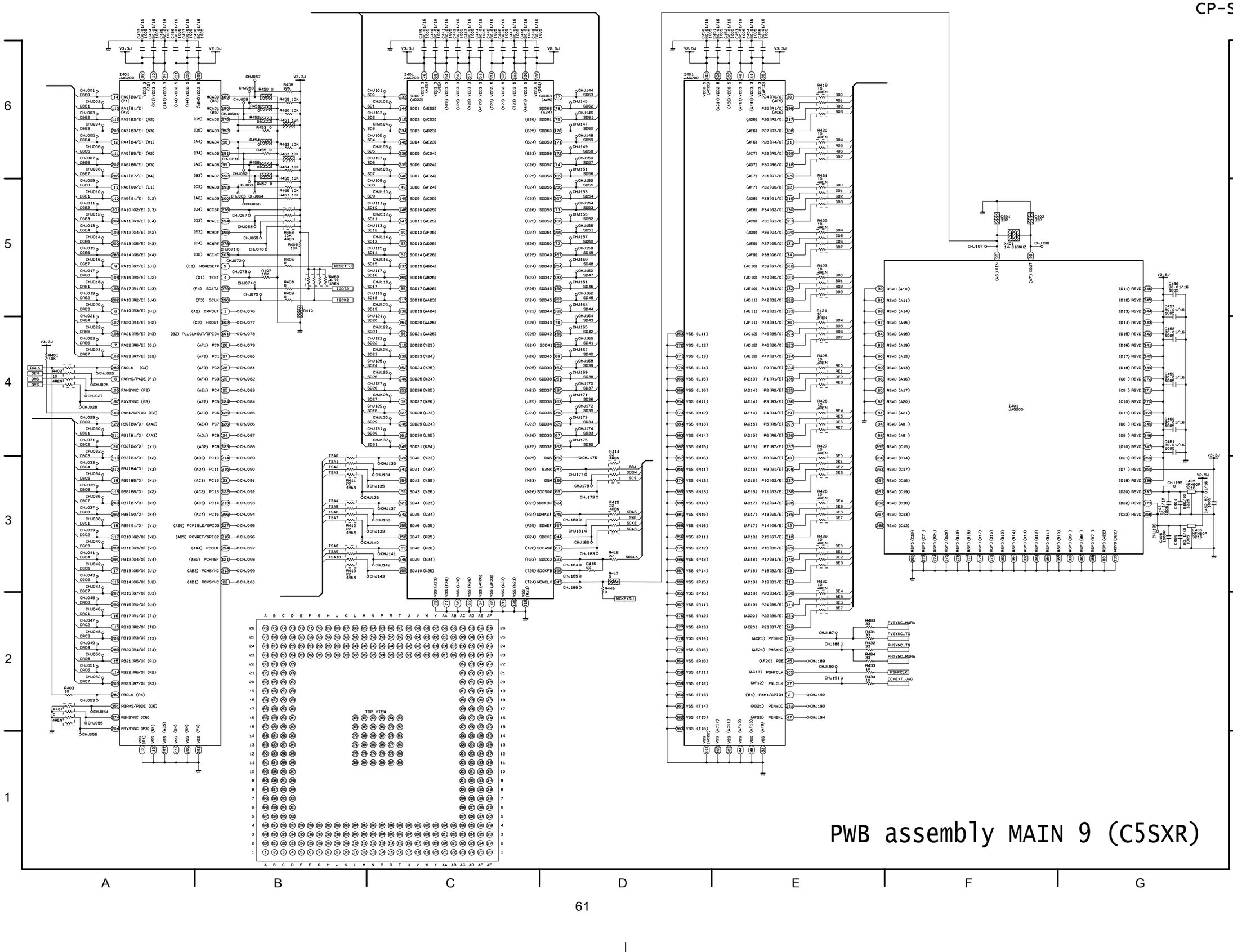

PWB assembly MAIN 6
(C5SXR)
BOTTOM VIEW
Data Bus
videoport
misc
dispport
serial
parallel
Stand by I2C
POWER5 I2C
GND1
+3.3V
+4.3V
3.6V
+3.P



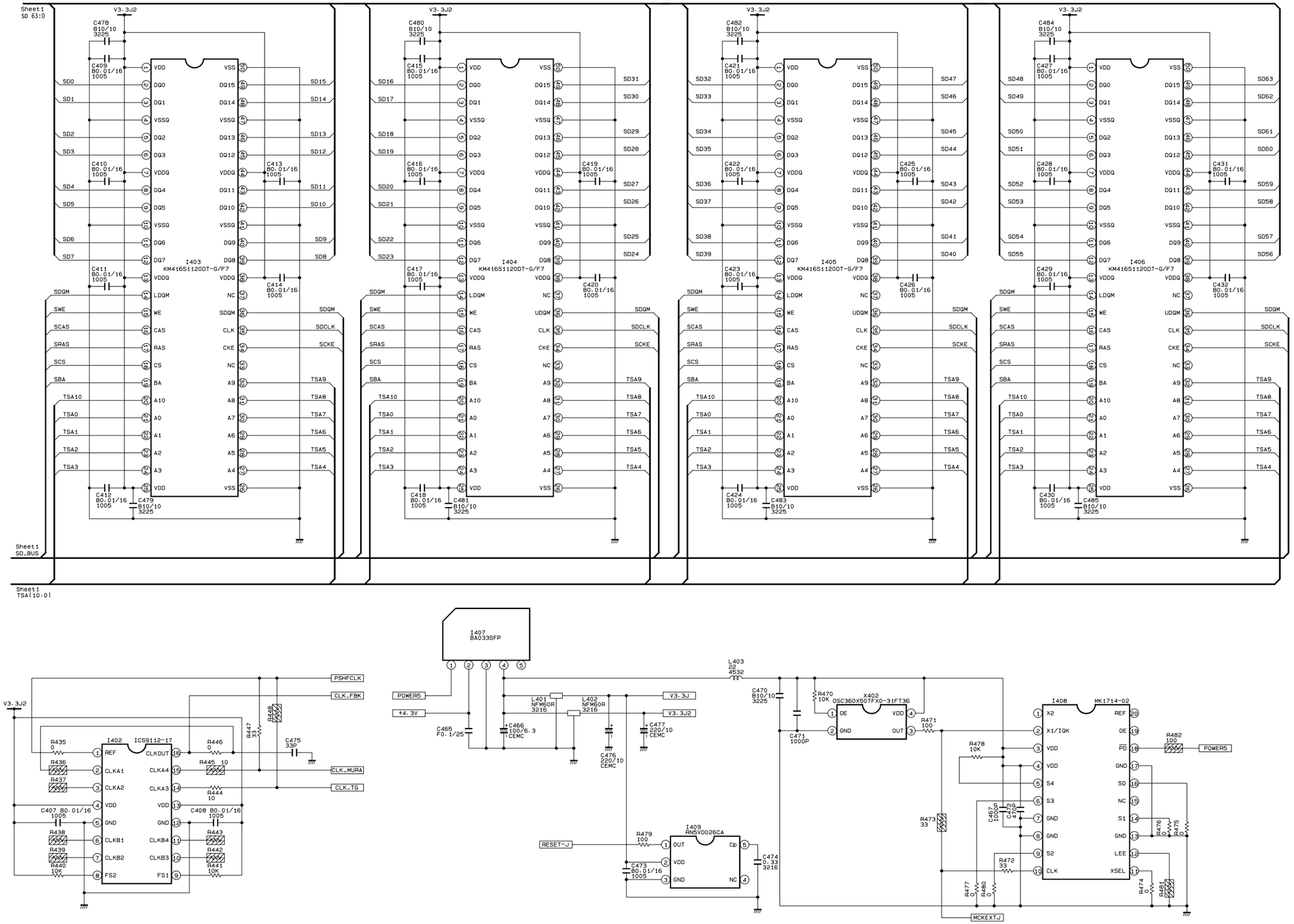
PWB assembly MAIN 7 (C5SXR)



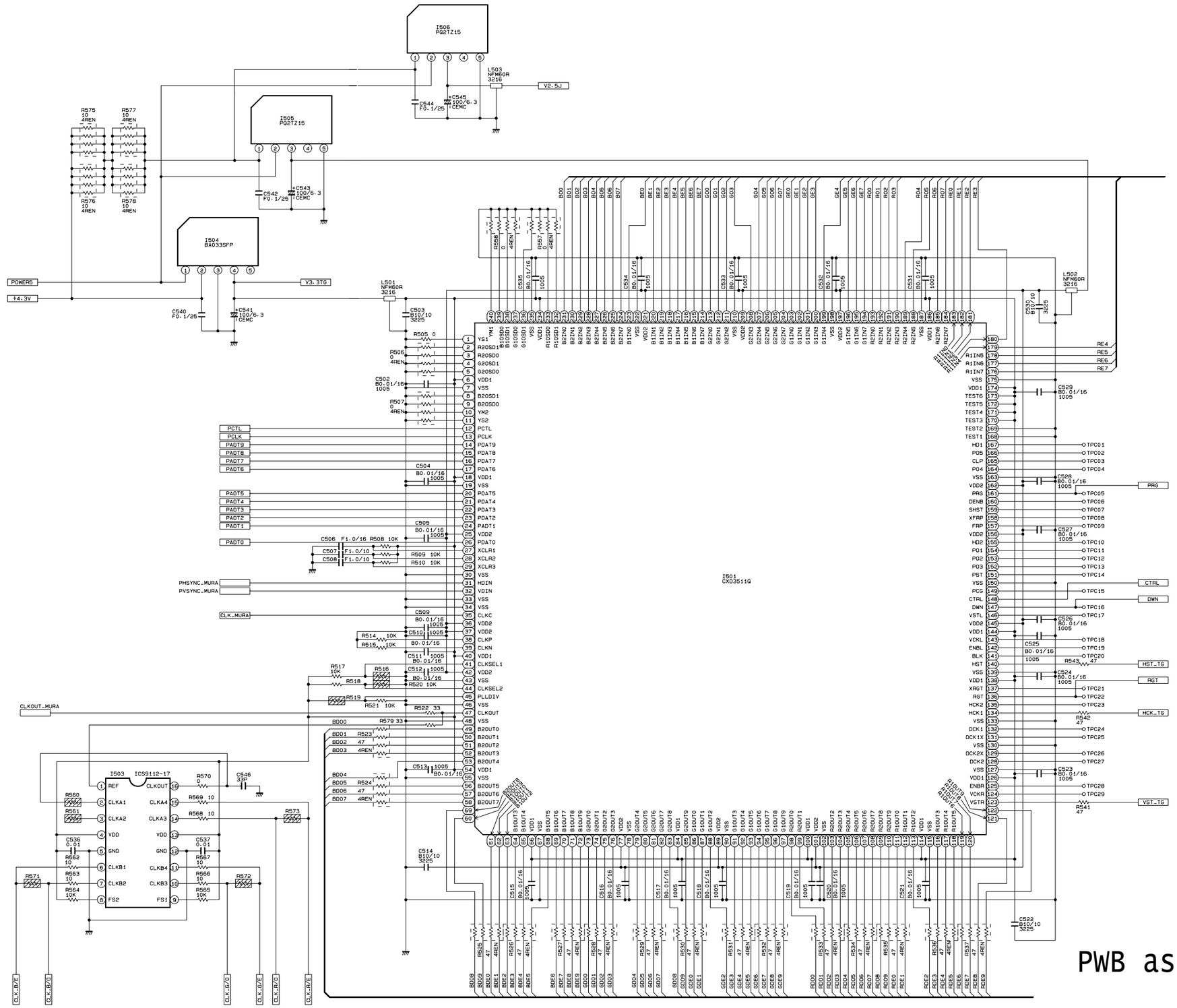
PWB assembly MAIN 8 (C5SXR)



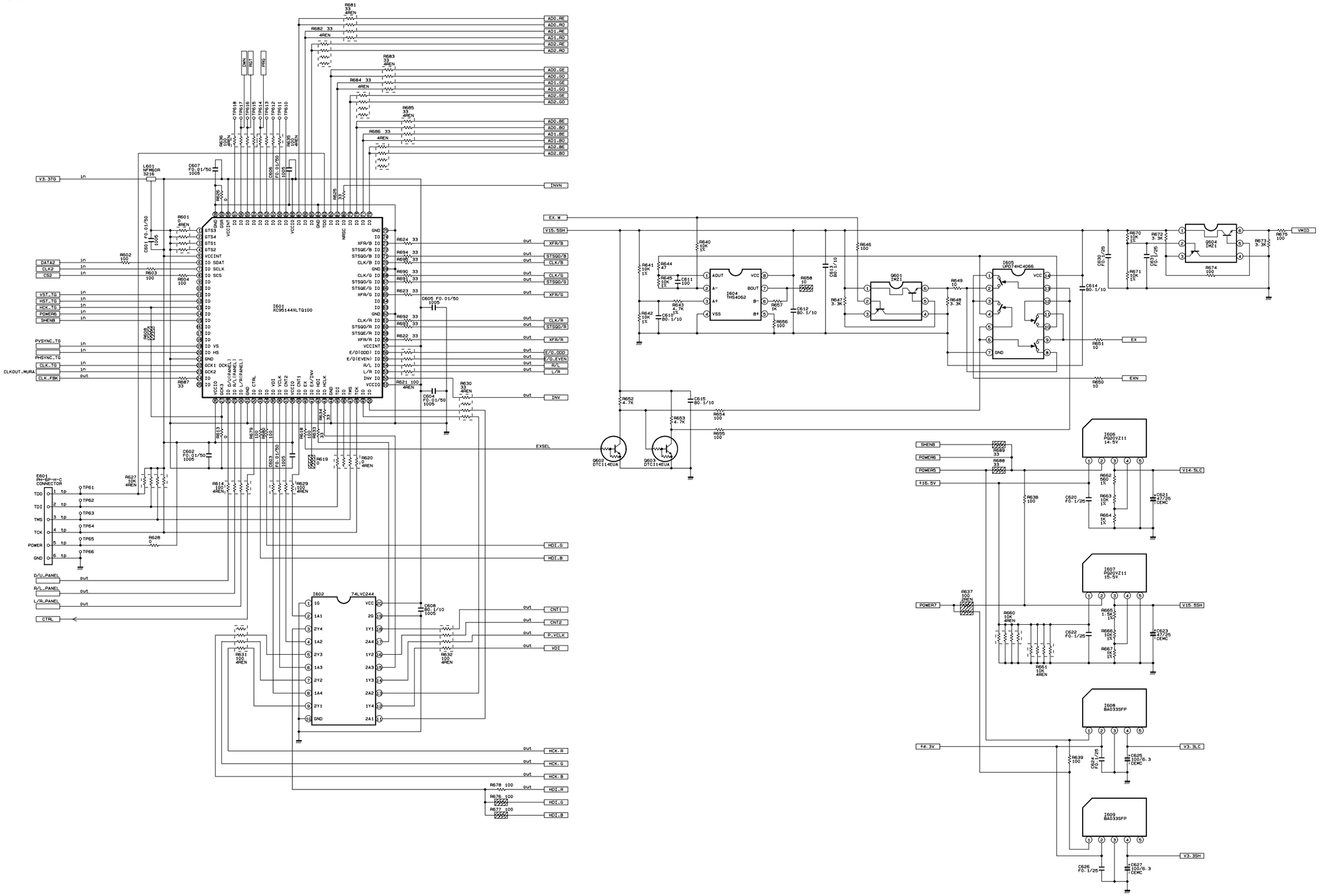
PWB assembly MAIN 9 (C5SXR)



PWB assembly MAIN 10 (C5SXR)

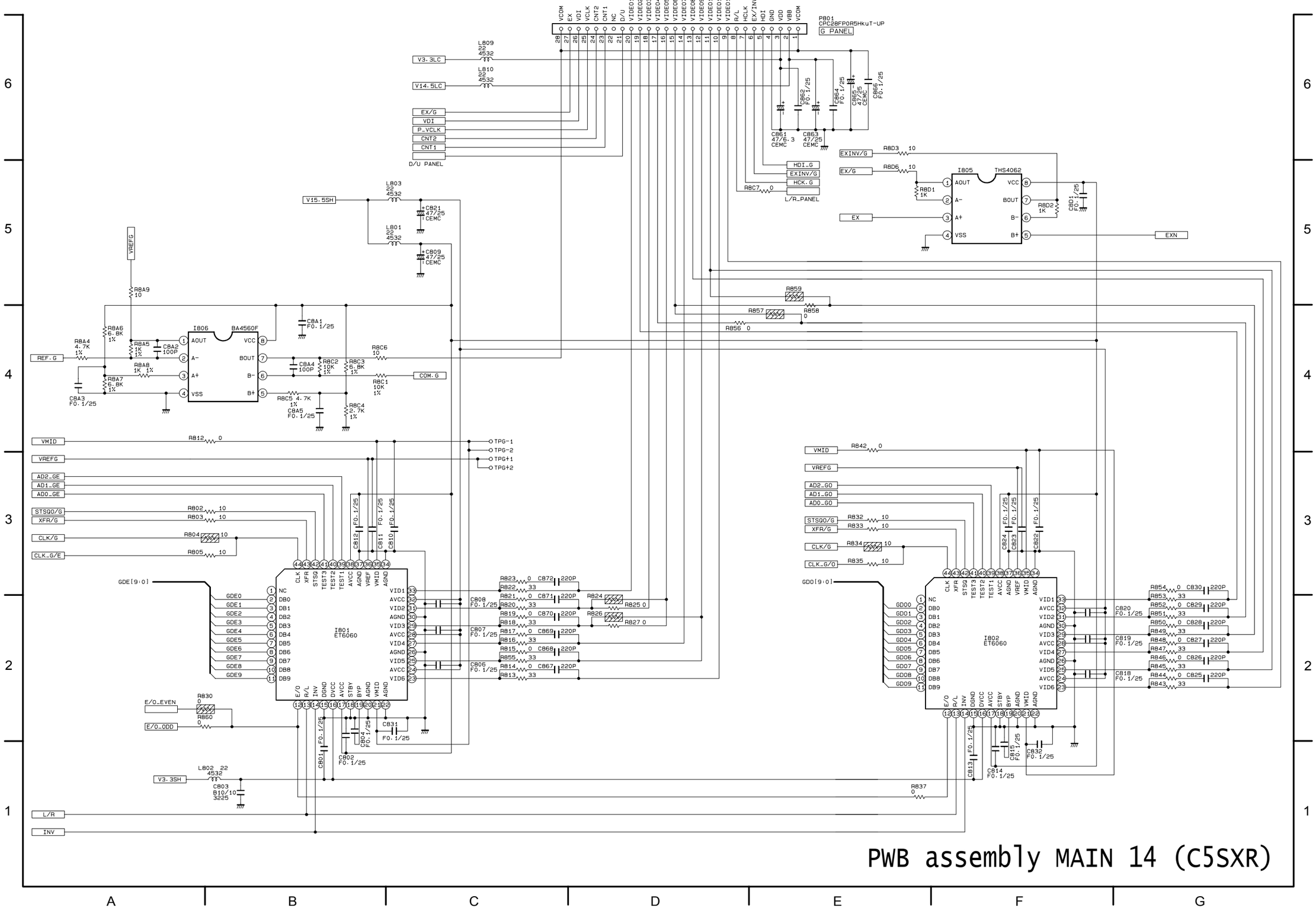


PWB assembly MAIN 11 (C5SXR)

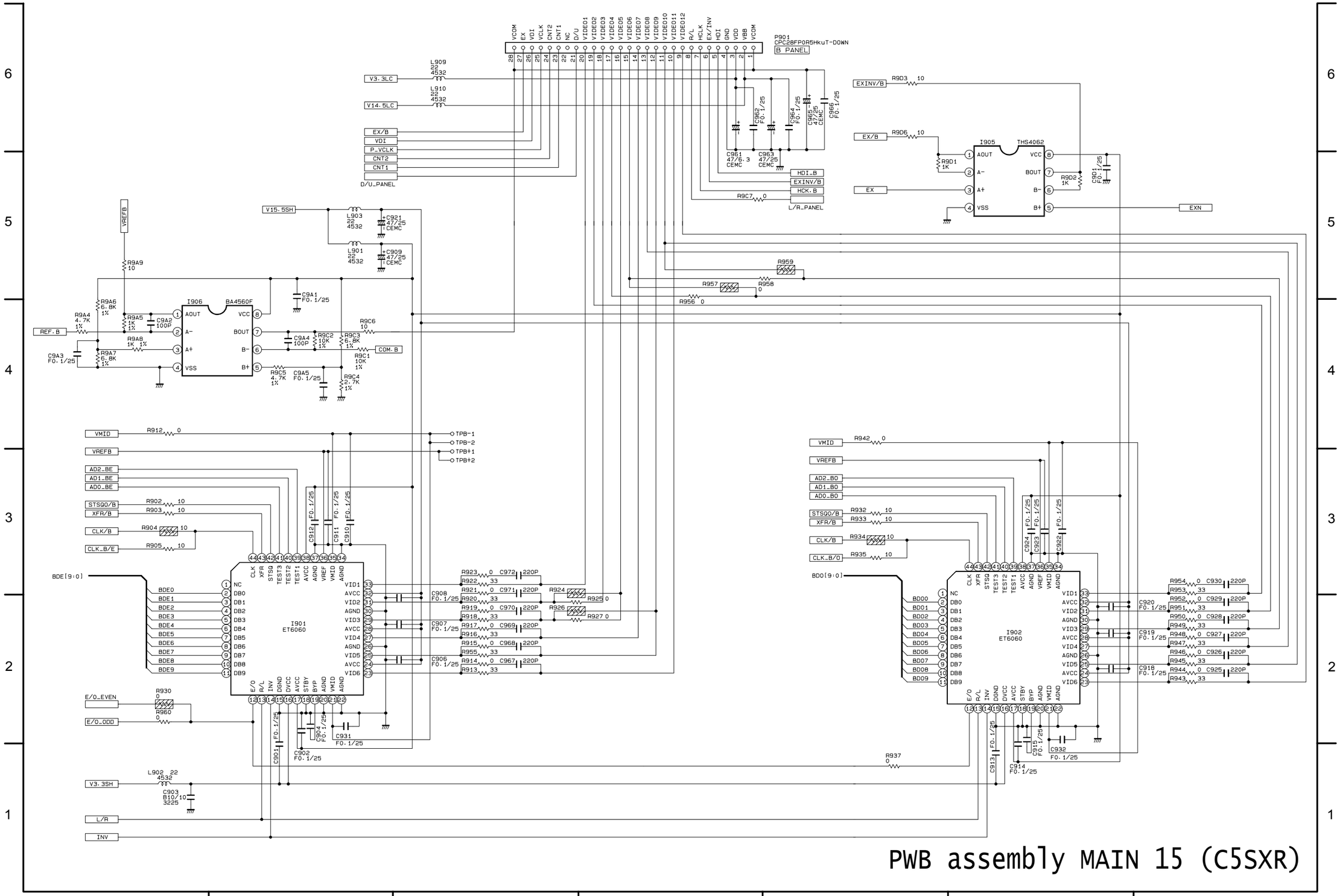


PWB assembly MAIN 12 (C5SXR)

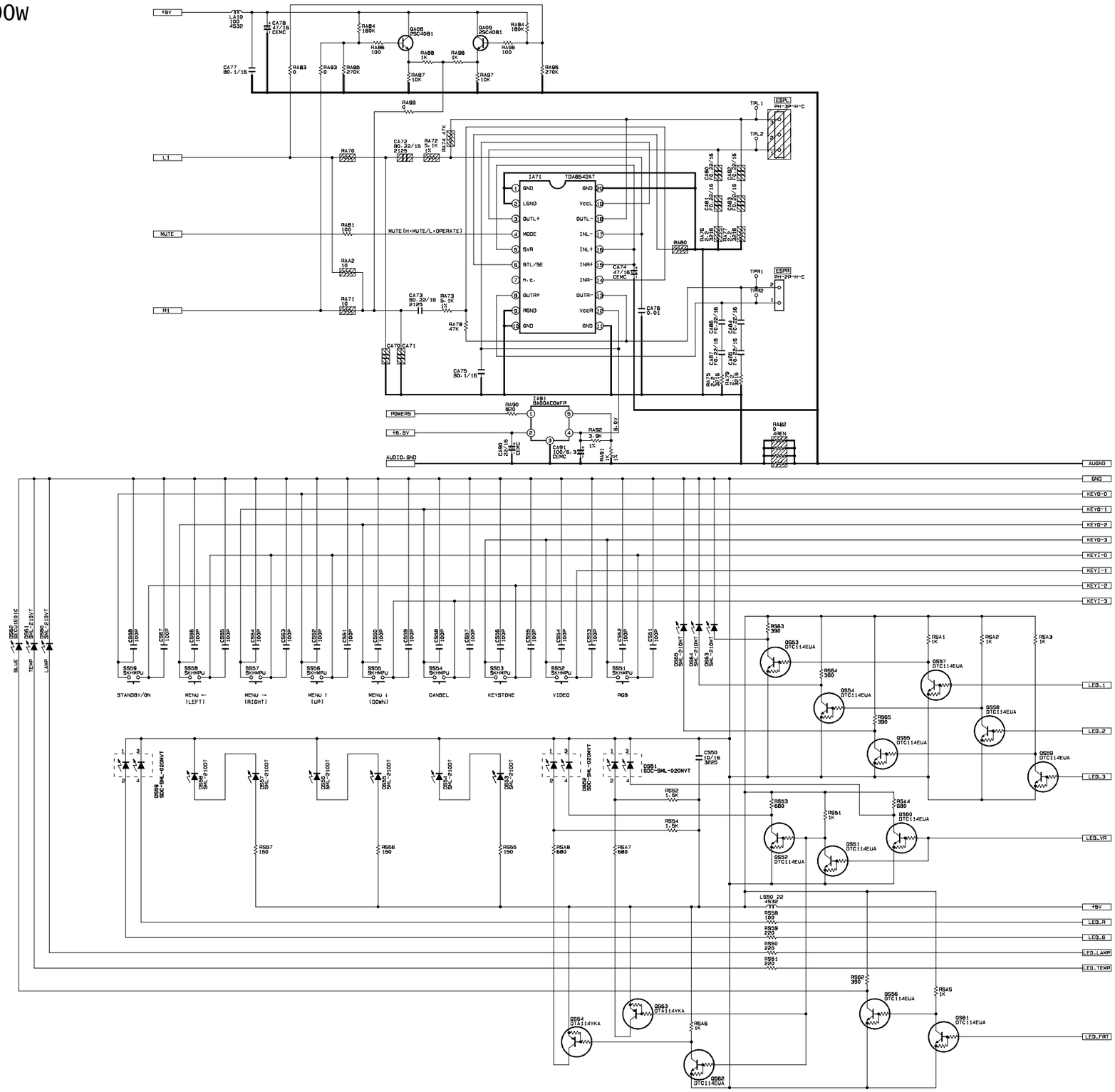
PWB assembly MAIN 13 (C5SXR)



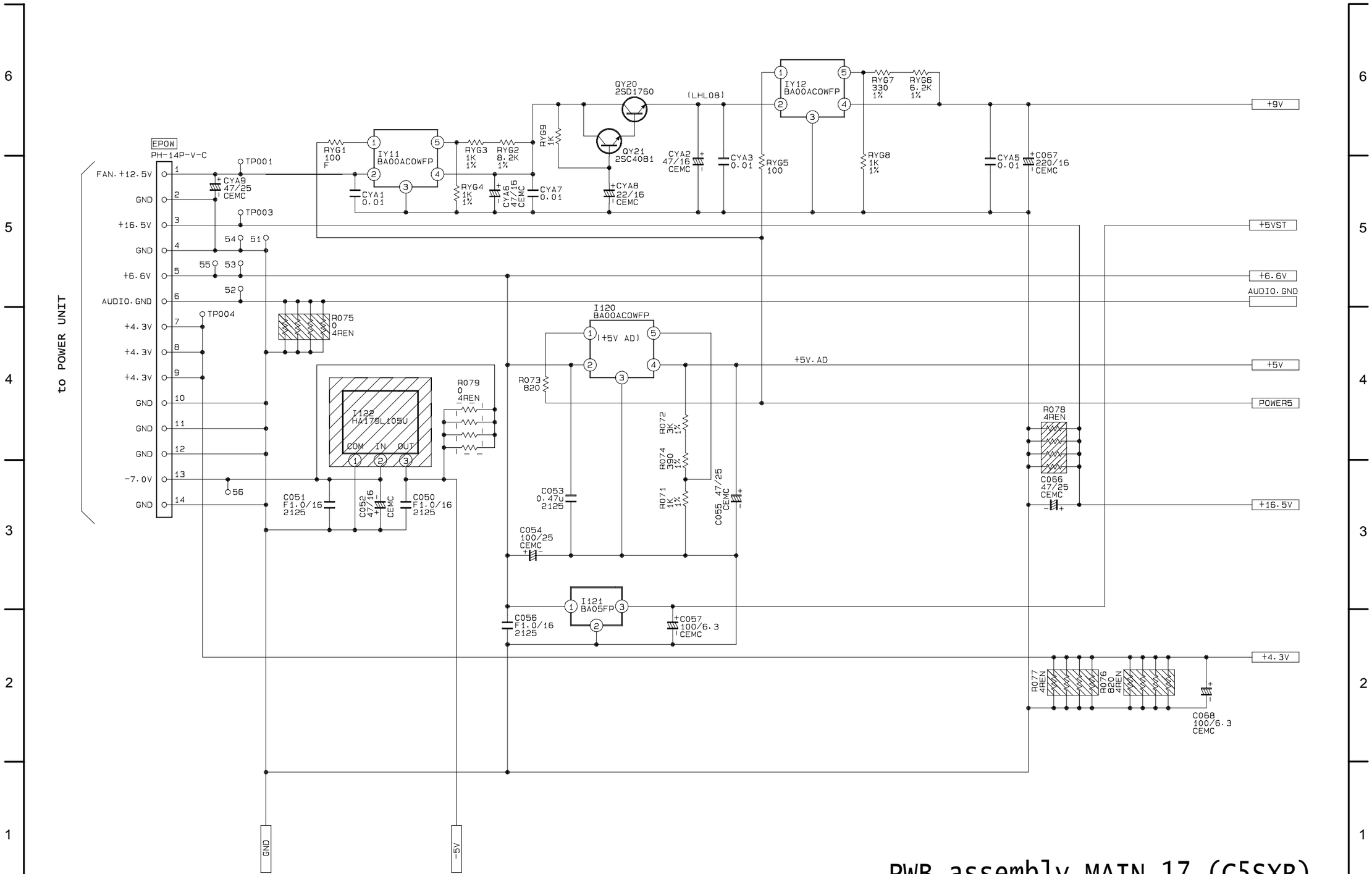
PWB assembly MAIN 14 (C5SXR)



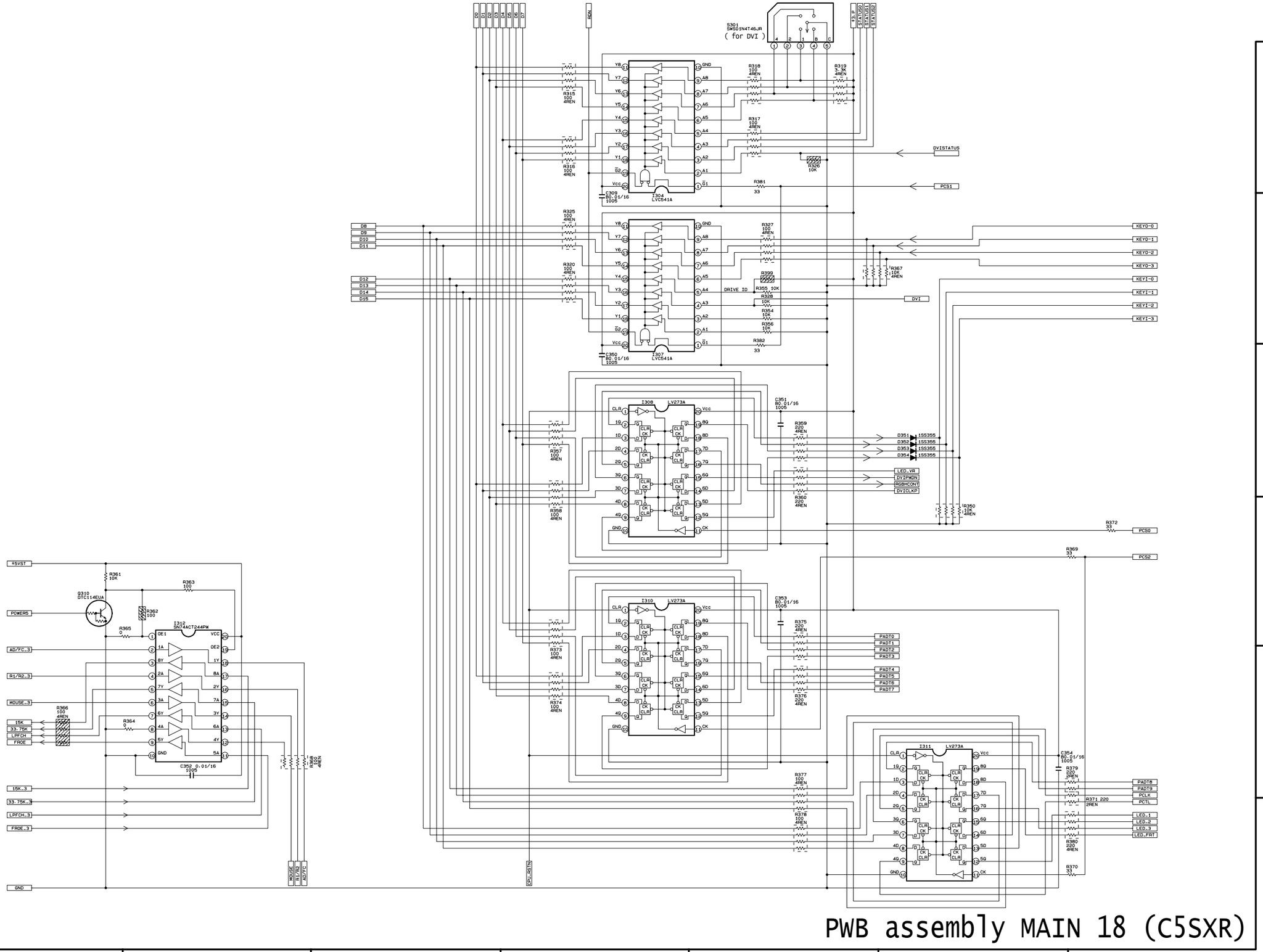
PWB assembly MAIN 15 (C5SXR)



PWB assembly MAIN 16 (C5SXR)



PWB assembly MAIN 17 (C5SXR)

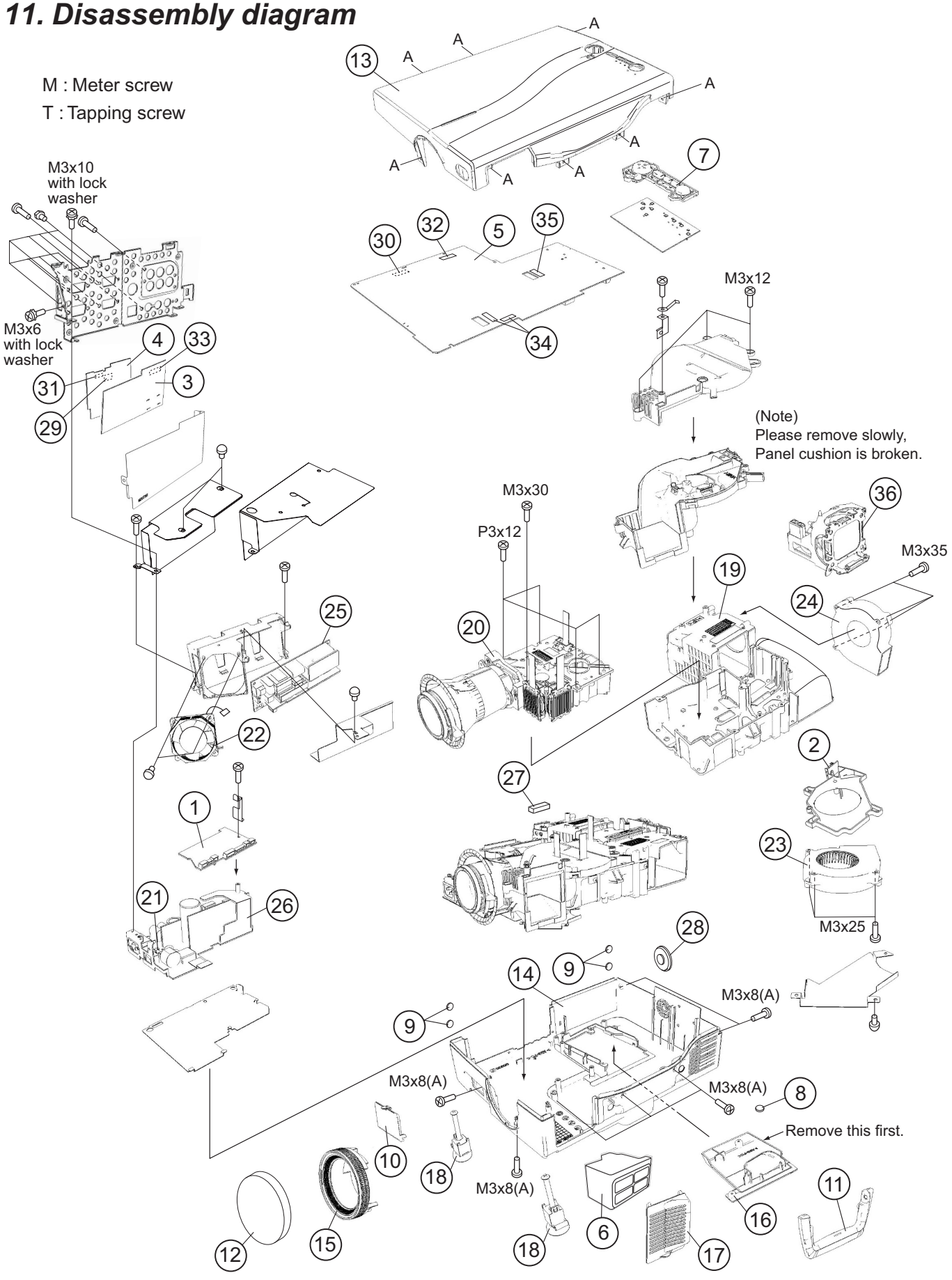


PWB assembly MAIN 18 (C5SXR)

11. Disassembly diagram

M : Meter screw

T : Tapping screw



THE UPDATED PARTS LIST

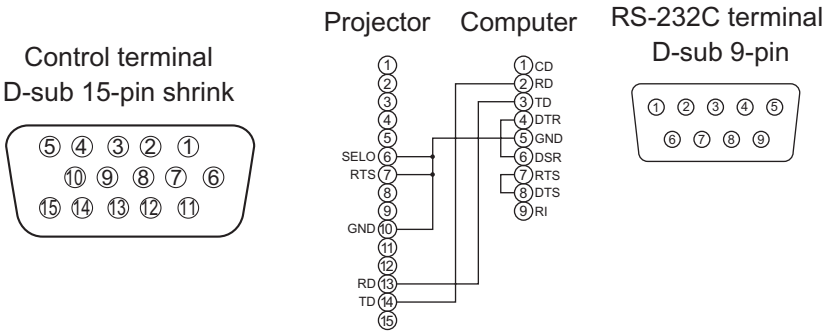
FOR THIS MODEL IS

AVAILABLE ON ESTA

13. RS-232C communication

(1) Turn off the projector and computer power supplies and connect with the RS-232C cable.

(2) Turn on the computer power supply and, after the computer has started up, turn on the projector power supply.



Communications setting

19200bps, 8N1

1 Protocol

Consist of header (7 bytes) + command data (6 bytes).

2 Header

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high.

CRC_low : Lower byte of CRC flag for command data.

CRC_high : Upper byte of CRC flag for command data.

3 Command data

Command data chart

byte_0	byte_1	byte_2	byte_3	byte_4	byte_5
Action		Type		Setting code	
low	high	low	high	low	high

Action (byte_0 - 1)

Action	Classification	Content
1	SET	Change setting to desired value.
2	GET	Read projector internal setup value.
4	INCREMENT	Increment setup value by 1.
5	DECREMENT	Decrement setup value by 1.
6	EXECUTE	Run a command.

Requesting projector status (Get command)

(1) Send the request code Header + Command data (‘02H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) from the computer to the projector.

(2) The projector returns the response code ‘1DH’+ data (2 bytes) to the computer.

Changing the projector settings (Set command)

(1) Send the setting code Header + Command data (‘01H’+‘00H’+ type (2 bytes) + setting code (2 bytes)) from the computer to the projector.

(2) The projector changes the setting based on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

Using the projector default settings (Reset Command)

(1) The computer sends the default setting code Header + Command data (‘06H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector changes the specified setting to the default value.

(3) The projector returns the response code ‘06H’ to the computer.

Increasing the projector setting value (Increment command)

(1) The computer sends the increment code Header + Command data (‘04H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector increases the setting value on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

Decreasing the projector setting value (Decrement command)

(1) The computer sends the decrement code Header + Command data (‘05H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector decreases the setting value on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

When a command sent by the projector cannot be understood by the computer

When the command sent by the projector cannot be understood, the error command ‘15H’ is returned by the computer. Some times, the projector ignores RS-232C commands during other works. If the error command ‘15H’ is returned, please send the same command again.

When data sent by the projector cannot be practice

When the command sent by the projector cannot be practiced, the error code ‘1cH’ +‘xxxxH’ is returned.

When the data length is greater than indicated by the data length code, the projector will ignore the excess data code. Conversely, when the data length is shorter than indicated by the data length code, an error code will be returned to the projector.

NOTE:

- Operation cannot be guaranteed when the projector receives an undefined command or data.
- Provide an interval of at least 40ms between the response code and any other code.
- The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
- Commands are not accepted during warm-up.

Command data chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Blank Color	Set	Red	BE EF 03 06 00	3B D3	01 00	00 30	00 00
		Orange	BE EF 03 06 00	AB D2	01 00	00 30	01 00
		Green	BE EF 03 06 00	5B D2	01 00	00 30	02 00
		Blue	BE EF 03 06 00	CB D3	01 00	00 30	03 00
		Purple	BE EF 03 06 00	FB D1	01 00	00 30	04 00
		White	BE EF 03 06 00	6B D0	01 00	00 30	05 00
		Black	BE EF 03 06 00	9B D0	01 00	00 30	06 00
	Get		BE EF 03 06 00	08 D3	02 00	00 30	00 00
Mirror	Set	Normal	BE EF 03 06 00	C7 D2	01 00	01 30	00 00
		H Inverse	BE EF 03 06 00	57 D3	01 00	01 30	01 00
		V Inverse	BE EF 03 06 00	A7 D3	01 00	01 30	02 00
		H&V Inverse	BE EF 03 06 00	37 D2	01 00	01 30	03 00
	Get		BE EF 03 06 00	F4 D2	02 00	01 30	00 00
Freeze	Set	Normal	BE EF 03 06 00	83 D2	01 00	02 30	00 00
		Freeze	BE EF 03 06 00	13 D3	01 00	02 30	01 00
	Get		BE EF 03 06 00	B0 D2	02 00	02 30	00 00
Menu Color	Set	Red	BE EF 03 06 00	7F D3	01 00	03 30	00 00
		Orange	BE EF 03 06 00	EF D2	01 00	03 30	01 00
		Green	BE EF 03 06 00	1F D2	01 00	03 30	02 00
		Blub	BE EF 03 06 00	8F D3	01 00	03 30	03 00
		Purple	BE EF 03 06 00	BF D1	01 00	03 30	04 00
		Transparent	BE EF 03 06 00	2F D0	01 00	03 30	05 00
		Gray	BE EF 03 06 00	DF D0	01 00	03 30	06 00
	Get		BE EF 03 06 00	4C D3	02 00	03 30	00 00
Startup	Set	Turn ON	BE EF 03 06 00	0B D2	01 00	04 30	00 00
		Turn OFF	BE EF 03 06 00	9B D3	01 00	04 30	01 00
	Get		BE EF 03 06 00	38 D2	02 00	04 30	00 00
Language	Set	English	BE EF 03 06 00	F7 D3	01 00	05 30	00 00
		Français	BE EF 03 06 00	67 D2	01 00	05 30	01 00
		Deutsch	BE EF 03 06 00	97 D2	01 00	05 30	02 00
		Español	BE EF 03 06 00	07 D3	01 00	05 30	03 00
		Italiano	BE EF 03 06 00	37 D1	01 00	05 30	04 00
		Norsk	BE EF 03 06 00	A7 D0	01 00	05 30	05 00
		Nederlands	BE EF 03 06 00	57 D0	01 00	05 30	06 00
		Português	BE EF 03 06 00	C7 D1	01 00	05 30	07 00
		Japanese	BE EF 03 06 00	37 D4	01 00	05 30	08 00
	Get		BE EF 03 06 00	C4 D3	02 00	05 30	00 00

Command data chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Magnify	Get		BE EF 03 06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF 03 06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF 03 06 00	CB D3	05 00	07 30	00 00
Auto off	Get		BE EF 03 06 00	08 86	02 00	10 31	00 00
	Increment		BE EF 03 06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF 03 06 00	BF 87	05 00	10 31	00 00
Brightness Reset	Execute		BE EF 03 06 00	58 D3	06 00	00 70	00 00
Contrast Reset	Execute		BE EF 03 06 00	A4 D2	06 00	01 70	00 00
V.Position Reset	Execute		BE EF 03 06 00	E0 D2	06 00	02 70	00 00
H.Position Reset	Execute		BE EF 03 06 00	IC D3	06 00	03 70	00 00
H.Size Reset	Execute		BE EF 03 06 00	68 D2	06 00	04 70	00 00
Color Balance R Reset	Execute		BE EF 03 06 00	94 D3	06 00	05 70	00 00
Color Balance B Reset	Execute		BE EF 03 06 00	D0 D3	06 00	06 70	00 00
Sharpness Reset	Execute		BE EF 03 06 00	C4 D0	06 00	09 70	00 00
Color Reset	Execute		BE EF 03 06 00	80 D0	06 00	0A 70	00 00
Tint Reset	Execute		BE EF 03 06 00	7C D1	06 00	0B 70	00 00
Keystone Reset	Execute		BE EF 03 06 00	08 D0	06 00	0C 70	00 00
Auto	Execute		BE EF 03 06 00	91 D0	06 00	0A 20	00 00
Blank on/off	Set	off	BE EF 03 06 00	FB D8	01 00	20 30	00 00
		on	BE EF 03 06 00	6B D9	01 00	20 30	01 00
	Get		BE EF 03 06 00	C8 D8	02 00	20 30	00 00
Error Status	Get		BE EF 03 06 00	D9 D8	02 00	20 60	00 00
			(Example of Return) 00 00 (Normal) 01 00 (Cover-error) 02 00 (Fan-error) 03 00 (Lamp-error) 04 00 (reserved) 05 00 (reserved) 06 00 (Lamp-Time-over)				
Power	Set	OFF	BE EF 03 06 00	2A D3	01 00	00 60	00 00
		ON	BE EF 03 06 00	BA D2	01 00	00 60	01 00
	Get		BE EF 03 06 00	19 D3	02 00	00 60	00 00
Input Source	Set	RGB1	BE EF 03 06 00	FE D2	01 00	00 20	00 00
		RGB2	BE EF 03 06 00	3E D0	01 00	00 20	04 00
		Digital	BE EF 03 06 00	0E D2	01 00	00 20	03 00
		Video	BE EF 03 06 00	6E D3	01 00	00 20	01 00
		SVideo	BE EF 03 06 00	9E D3	01 00	00 20	02 00
		Component	BE EF 03 06 00	AE D1	01 00	00 20	05 00
	Get		BE EF 03 06 00	CD D2	02 00	00 20	00 00
Volume	Get		BE EF 03 06 00	31 D3	02 00	01 20	00 00
	Increment		BE EF 03 06 00	57 D3	04 00	01 20	00 00
	Decrement		BE EF 03 06 00	86 D2	05 00	01 20	00 00

Command data chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Mute	Set	Normal	BE EF 03 06 00	46 D3	01 00	02 20	00 00
		Mute	BE EF 03 06 00	D6 D2	01 00	02 20	01 00
	Get		BE EF 03 06 00	75 D3	02 00	02 20	00 00
Brightness	Get		BE EF 03 06 00	89 D2	02 00	03 20	00 00
	Increment		BE EF 03 06 00	EF D2	04 00	03 20	00 00
	Decrement		BE EF 03 06 00	3E D3	05 00	03 20	00 00
Contrast	Get		BE EF 03 06 00	FD D3	02 00	04 20	00 00
	Increment		BE EF 03 06 00	9B D3	04 00	04 20	00 00
	Decrement		BE EF 03 06 00	4A D2	05 00	04 20	00 00
Color Balance R	Get		BE EF 03 06 00	01 D2	02 00	05 20	00 00
	Increment		BE EF 03 06 00	67 D2	04 00	05 20	00 00
	Decrement		BE EF 03 06 00	B6 D3	05 00	05 20	00 00
Color Balance B	Get		BE EF 03 06 00	45 D2	02 00	06 20	00 00
	Increment		BE EF 03 06 00	23 D2	04 00	06 20	00 00
	Decrement		BE EF 03 06 00	F2 D3	05 00	06 20	00 00
Keystone_V	Get		BE EF 03 06 00	B9 D3	02 00	07 20	00 00
	Increment		BE EF 03 06 00	DF D3	04 00	07 20	00 00
	Decrement		BE EF 03 06 00	0E D2	05 00	07 20	00 00
Keystone_H	Get		BE EF 03 06 00	E9 D0	02 00	0B 20	00 00
	Increment		BE EF 03 06 00	8F D0	04 00	0B 20	00 00
	Decrement		BE EF 03 06 00	5E D1	05 00	0B 20	00 00
Aspect	Set	4:3, Full	BE EF 03 06 00	9E D0	01 00	08 20	00 00
		16:9	BE EF 03 06 00	0E D1	01 00	08 20	01 00
		Small	BE EF 03 06 00	FE D1	01 00	08 20	02 00
		Real	BE EF 03 06 00	6E D0	01 00	08 20	03 00
	Get		BE EF 03 06 00	AD D0	02 00	08 20	00 00
Display Position at 16 : 9 or Small	Set	Default	BE EF 03 06 00	62 D1	01 00	09 20	00 00
		Bottom	BE EF 03 06 00	F2 D0	01 00	09 20	01 00
		Top	BE EF 03 06 00	02 D0	01 00	09 20	02 00
	Get		BE EF 03 06 00	51 D1	02 00	09 20	00 00
V.Position	Get		BE EF 03 06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF 03 06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF 03 06 00	BA 82	05 00	00 21	00 00
H.Position	Get		BE EF 03 06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF 03 06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF 03 06 00	46 83	05 00	01 21	00 00
H.Size	Get		BE EF 03 06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF 03 06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF 03 06 00	02 83	05 00	02 21	00 00
H.Phase	Get		BE EF 03 06 00	49 83	02 00	03 21	00 00
	Increment		BE EF 03 06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF 03 06 00	FE 82	05 00	03 21	00 00

Command data chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Sharpness	Get		BE EF 03 06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF 03 06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF 03 06 00	46 73	05 00	01 22	00 00
Color	Get		BE EF 03 06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF 03 06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF 03 06 00	02 73	05 00	02 22	00 00
Tint	Get		BE EF 03 06 00	49 73	02 00	03 22	00 00
	Increment		BE EF 03 06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF 03 06 00	FE 72	05 00	03 22	00 00
Video Format	Set	Auto	BE EF 03 06 00	9E 75	01 00	00 22	0A 00
		NTSC	BE EF 03 06 00	FE 71	01 00	00 22	04 00
		PAL	BE EF 03 06 00	6E 70	01 00	00 22	05 00
		SECAM	BE EF 03 06 00	6E 75	01 00	00 22	09 00
		NTSC 4.43	BE EF 03 06 00	5E 72	01 00	00 22	02 00
		M-PAL	BE EF 03 06 00	FE 74	01 00	00 22	08 00
		N-PAL	BE EF 03 06 00	0E 71	01 00	00 22	07 00
	Get		BE EF 03 06 00	0D 73	02 00	00 22	00 00
Progressive	Set	off	BE EF 03 06 00	4A 72	01 00	07 22	00 00
		TV	BE EF 03 06 00	DA 73	01 00	07 22	01 00
		FILM	BE EF 03 06 00	2A 73	01 00	07 22	02 00
	Get		BE EF 03 06 00	79 72	02 00	07 22	00 00
Black	Set	off	BE EF 03 06 00	5E 71	01 00	08 22	00 00
		on	BE EF 03 06 00	CE 70	01 00	08 22	01 00
	Get		BE EF 03 06 00	6D 71	02 00	08 22	00 00
HDTV	Set	1080i	BE EF 03 06 00	F2 73	01 00	05 22	00 00
		1035i	BE EF 03 06 00	62 72	01 00	05 22	01 00
	Get		BE EF 03 06 00	C1 73	02 00	05 22	00 00
PinP Size	Set	off	BE EF 03 06 00	FE 22	01 00	00 23	00 00
		Large	BE EF 03 06 00	6E 23	01 00	00 23	01 00
		Small	BE EF 03 06 00	9E 23	01 00	00 23	02 00
	Get		BE EF 03 06 00	Cd 22	02 00	00 23	00 00

Command data chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
PinP Position	Set	Upper left	BE EF 03 06 00	02 23	01 00	01 23	00 00
		Upper right	BE EF 03 06 00	92 22	01 00	01 23	01 00
		bottom left	BE EF 03 06 00	62 22	01 00	01 23	03 00
		bottom right	BE EF 03 06 00	F2 23	01 00	01 23	02 00
	Get		BE EF 03 06 00	31 23	02 00	01 23	00 00
PinP Audio ch	Set	RGB	BE EF 03 06 00	BA 22	01 00	03 23	00 00
		Video	BE EF 03 06 00	2A 23	01 00	03 23	01 00
	Get		BE EF 03 06 00	89 22	02 00	03 23	00 00
PinP Input	Set	Video	BE EF 03 06 00	D6 22	01 00	02 23	01 00
		S-Video	BE EF 03 06 00	26 22	01 00	02 23	02 00
		Component	BE EF 03 06 00	16 20	01 00	02 23	05 00
	Get		BE EF 03 06 00	75 23	02 00	02 23	00 00
Sync on G	Set	off	BE EF 03 06 00	CB D0	01 00	08 30	01 00
		on	BE EF 03 06 00	5B D1	01 00	08 30	00 00
	Get		BE EF 03 06 00	68 D1	02 00	08 30	00 00
WHISPER	Set	NORMAL	BE EF 03 06 00	3B 23	01 00	00 33	00 00
		WHISPER	BE EF 03 06 00	AB 22	01 00	00 33	01 00
	Get		BE EF 03 06 00	08 23	02 00	00 33	00 00
GAMMA	Set	NORMAL	BE EF 03 06 00	C7 F0	01 00	A1 30	00 00
		CINEMA	BE EF 03 06 00	57 F1	01 00	A1 30	01 00
		DYNAMIC	BE EF 03 06 00	A7 F1	01 00	A1 30	02 00
	Get		BE EF 03 06 00	F4 F0	02 00	A1 30	00 00

HITACHI

Hitachi, Ltd. Tokyo, Japan
International Sales Division
THE HITACHI ATAGO BUILDING,
No. 15 –12 Nishi Shinbashi, 2 – Chome,
Minato – Ku, Tokyo 105-8430, Japan.
Tel: 03 35022111

HITACHI EUROPE LTD,
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire
SL6 8YA
UNITED KINGDOM
Tel: 01628 643000
Fax: 01628 643400
Email: **consumer-service@hitachi-eu.com**

HITACHI EUROPE S.A.
364 Kifissias Ave. & 1, Delfon Str.
152 33 Chalandri
Athens
GREECE
Tel: 1-6837200
Fax: 1-6835964
Email: **service.hellas@hitachi-eu.com**

HITACHI EUROPE GmbH
Munich Office
Dornacher Strasse 3
D-85622 Feldkirchen bei München
GERMANY
Tel: +49-89-991 80-0
Fax: +49-89-991 80-224
Hotline: +49-180-551 25 51 (12ct/min)
Email: **HSE-DUS.service@hitachi-eu.com**

HITACHI EUROPE S.A.
Gran Via Carlos III, 101-1
08028 Barcelona
SPAIN
Tel: 93 409 2550
Fax: 93 491 3513
Email: **atencion.cliente@hitachi-eu.com**

HITACHI EUROPE srl
Via Tommaso Gulli N.39, 20147
Milano, Italia
ITALY
Tel: +39 02 487861
Tel: +39 02 38073415 Servizio Clienti
Fax: +39 02 48786381/2
Email: customerservice.italy@hitachi-eu.com

HITACHI Europe AB
Box 77 S-164 94 Kista
SWEDEN
Tel: +46 (0) 8 562 711 00
Fax: +46 (0) 8 562 711 13
Email: **csgswe@hitachi-eu.com**

HITACHI EUROPE S.A.S
Lyon Office
B.P. 45, 69671 BRON CEDEX
FRANCE
Tel: 04 72 14 29 70
Fax: 04 72 14 29 99
Email: **france.consommateur@hitachi-eu.com**

HITACHI EUROPE LTD (Norway) AB
STRANDVEIEN 18
1366 Lysaker
NORWAY
Tel: 67 5190 30
Fax: 67 5190 32
Email: **csgnor@hitachi-eu.com**

HITACH EUROPE AB
Egebækgård
Egebækvej 98
DK-2850 Nærum
DENMARK
Tel: +45 43 43 6050
Fax: +45 43 60 51
Email: **csgnor@hitachi-eu.com**

HITACHI EUROPE AB
Neopoli / Niemenkatu 73
FIN-15140 Lahti
FINLAND
Tel : +358 3 8858 271
Fax: +358 3 8858 272
Email: **csgnor@hitachi-eu.com**

Hitachi Europe Ltd
Bergensesteenweg 421
1600 Sint-Pieters-Leeuw
BELGIUM
Tel: +32 2 363 99 01
Fax: +32 2 363 99 00
Email: **sofie.van.bom@hitachi-eu.com**

HITACHI EUROPE LTD
Na Sychrove 975/8
101 27 Praha 10 – Bohdalec
CZECH REPUBLIC
Tel: +420 267 212 383
Fax: +420 267 212 385
Email: **csgnor@hitachi-eu.com**

www.hitachidigitalmedia.com